

SEQUENCE LISTING

<110> Choi, Gil

<120> 37 Staphylococcus aureus Genes and Polypeptides

<130> PB515P1

<150> PCT/US00/23773

<151> 2000-08-31

<150> 60/151,933

<151> 1999-09-01

<160> 74

<170> PatentIn Ver. 3.1

<210> 1

<211> 1318

<212> DNA

<213> Staphylococcus aureus

<400> 1

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<212> PRT

<213> Staphylococcus aureus

<400> 2

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 65 70 75 80
 His Gln Leu Lys Leu Asp Val Val Ser Tyr Asn Asp Phe Leu Gly Gln
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 Ile Ile Asp Gln Tyr Thr Ser Val Ala Val Thr Gly Ala His Gly Lys
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 Thr Ser Thr Thr Gly Leu Leu Ser His Val Met Asn Gly Asp Lys Lys
 115 120 125
 Thr Ser Phe Leu Ile Gly Asp Gly Thr Gly Met Gly Leu Pro Glu Ser
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 Tyr Lys Pro Asp Tyr Ala Ile Met Thr Asn Ile Asp Phe Asp His Pro
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 Asp Ser Asp Asp Ile Tyr Ala Gln Asn Ile Gln Ile Thr Asp Lys Gly
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 Thr Ala Phe Asp Val Tyr Val Asp Gly Glu Phe Tyr Asp His Phe Leu
 245 250 255
 Ser Pro Gln Tyr Gly Asp His Thr Val Leu Asn Ala Leu Ala Val Ile
 260 265 270
 Ala Ile Ser Tyr Leu Glu Lys Leu Asp Val Thr Asn Ile Lys Glu Ala
 275 280 285
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 325 330 335
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Asn Glu Phe Ala Glu Ser Leu Ser Lys Ala Asp Arg Val Phe Leu Cys
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Glu Ile Phe Gly Ser Ile Arg Glu Asn Thr Gly Ala Leu Thr Ile Gln
 370 375 380

Asp Leu Ile Asp Lys Ile Glu Gly Ala Ser Leu Ile Asn Glu Asp Ser
 385 390 395 400

Ile Asn Val Leu Glu Gln Phe Asp Asn Ala Val Ile Leu Phe Met Gly
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Met Lys Asn Ala Phe
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 <213> Staphylococcus aureus

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Arg Lys Tyr Ser Lys Glu Gln Ala Asp Leu Gln Lys Thr Val Asp Val
 35 40 45

Tyr Arg Asn Tyr Lys Ala Lys Lys Glu Glu Leu Ala Asp Ile Glu Glu
 50 55 60
 Met Leu Ser Glu Thr Asp Asp Lys Glu Glu Val Glu Met Leu Lys Glu
 65 70 75 80
 Glu Ser Asn Gly Ile Lys Ala Glu Leu Pro Asn Leu Glu Glu Glu Leu
 85 90 95
 Lys Ile Leu Leu Ile Pro Lys Asp Pro Asn Asp Asp Lys Asp Val Ile
 100 105 110
 Val Glu Ile Arg Ala Ala Ala Gly Gly Asp Glu Ala Ala Ile Phe Ala
 115 120 125
 Gly Asp Leu Met Arg Met Tyr Ser Lys Tyr Ala Glu Ser Gln Gly Phe
 130 135 140
 Lys Thr Glu Ile Val Glu Ala Ser Glu Ser Asp His Gly Gly Tyr Lys
 145 150 155 160
 Glu Ile Ser Phe Ser Val Ser Gly Asn Gly Ala Tyr Ser Lys Leu Lys
 165 170 175
 Phe Glu Asn Gly Ala His Arg Val Gln Arg Val Pro Glu Thr Glu Ser
 180 185 190
 Gly Gly Arg Ile His Thr Ser Thr Ala Thr Val Ala Val Leu Pro Glu
 195 200 205
 Val Glu Asp Val Glu Ile Glu Ile Arg Asn Glu Asp Leu Lys Ile Asp
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 225 230 235 240
 Ser Ala Val Arg Ile Thr His Leu Pro Thr Gly Val Ile Ala Thr Ser
 245 250 255
 Ser Glu Lys Ser Gln Ile Gln Asn Arg Glu Lys Ala Met Lys Val Leu
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 Lys Ala Arg Leu Tyr Asp Met Lys Val Gln Glu Glu Gln Gln Lys Tyr
 275 280 285
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 290 295 300
 Ile Arg Thr Tyr Asn Tyr Pro Gln Ser Arg Val Thr Asp His Arg Ile
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 325 330 335
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 Glu Leu Asn Asn Gly Glu
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 35 40 45
 Thr Pro Val Gln Gln Leu Ala Ser Ile Asn Val Pro Glu Ala Arg Leu
 50 55 60
 Leu Val Ile Ser Pro Tyr Asp Lys Thr Ser Val Ala Asp Ile Glu Lys
 65 70 75 80
 Ala Ile Ile Ala Ala Asn Leu Gly Val Asn Pro Thr Ser Asp Gly Glu
 85 90 95
 Val Ile Arg Ile Ala Val Pro Ala Leu Thr Glu Glu Arg Arg Lys Glu
 100 105 110
 Arg Val Lys Asp Val Lys Lys Ile Gly Glu Glu Ala Lys Val Ser Val
 115 120 125
 Arg Asn Ile Arg Arg Asp Met Asn Asp Gln Leu Lys Lys Asp Glu Lys
 130 135 140
 Asn Gly Asp Ile Thr Glu Asp Glu Leu Arg Ser Gly Thr Glu Asp Val
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 Gln Lys Ala Thr Asp Asn Ser Ile Lys Glu Ile Asp Gln Met Ile Ala
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Asp Lys Glu Lys Asp Ile Met Ser Val
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<213> Staphylococcus aureus

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35 40 45
Val Glu Leu Asn Met Asp Gln Gly Thr Phe Lys Val Ile Ala Arg Lys
50 55 60
Asp Val Val Glu Glu Val Phe Asp Asp Arg Asp Glu Val Asp Leu Ser
65 70 75 80
Thr Ala Leu Val Lys Asn Pro Ala Tyr Glu Ile Gly Asp Ile Tyr Glu
85 90 95
Glu Asp Val Thr Pro Lys Asp Phe Gly Arg Val Gly Ala Gln Ala Ala
100 105 110

Lys Gln Ala Val Met Gln Arg Leu Arg Asp Ala Glu Arg Glu Ile Leu
 115 120 125
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 130 135 140
 Asp Arg Val Asp His Arg Tyr Val Tyr Val Asn Leu Gly Arg Ile Glu
 145 150 155 160
 Ala Val Leu Ser Glu Ala Glu Arg Ser Pro Asn Glu Lys Tyr Ile Pro
 165 170 175
 Asn Glu Arg Ile Lys Val Tyr Val Asn Lys Val Glu Gln Thr Thr Lys
 180 185 190
 Gly Pro Gln Ile Tyr Val Ser Arg Ser His Pro Gly Leu Leu Lys Arg
 195 200 205
 Leu Phe Glu Gln Glu Val Pro Glu Ile Tyr Asp Gly Thr Val Ile Val
 210 215 220
 Lys Ser Val Ala Arg Glu Ala Gly Asp Arg Ser Lys Ile Ser Val Phe
 225 230 235 240
 Ser Glu Asn Asn Asp Ile Asp Ala Val Gly Ala Cys Val Gly Ala Lys
 245 250 255
 Gly Ala Arg Val Glu Ala Val Val Glu Glu Leu Gly Gly Glu Lys Ile
 260 265 270
 Asp Ile Val Gln Trp Asn Glu Asp Pro Lys Val Phe Val Lys Asn Ala
 275 280 285
 Leu Ser Pro Ser Gln Val Leu Glu Val Ile Val Asp Glu Thr Asn Gln
 290 295 300
 Ser Thr Val Val Val Val Pro Asp Tyr Gln Leu Ser Leu Ala Ile Gly
 305 310 315 320
 Lys Arg Gly Gln Asn Ala Arg Leu Ala Ala Lys Leu Thr Gly Trp Lys
 325 330 335
 Ile Asp Ile Lys Ser Glu Thr Asp Ala Arg Glu Ala Gly Ile Tyr Pro
 340 345 350
 Val Val Glu Ala Glu Lys Val Thr Glu Glu Asp Val Ala Leu Glu Asp
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 370 375 380
 Thr Asn Val Glu Lys Glu Ser Glu
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 <212> DNA
 <213> Staphylococcus aureus

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<210> 10
<211> 183
<212> PRT
<213> Staphylococcus aureus

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35 40 45
Glu Glu Glu Thr Gln Val Lys Asp Gly Lys Ala Lys Thr Thr Val Lys
50 55 60
Lys Thr Phe Pro Gly Tyr Val Leu Val Glu Leu Ile Met Thr Asp Glu
65 70 75 80
Ser Trp Tyr Val Val Arg Asn Thr Pro Gly Val Thr Gly Phe Val Gly
85 90 95
Ser Ala Gly Ala Gly Ser Lys Pro Asn Pro Leu Leu Pro Glu Glu Val
100 105 110
Arg Phe Ile Leu Lys Gln Met Gly Leu Lys Glu Lys Thr Ile Asp Val
115 120 125
Glu Leu Glu Val Gly Glu Gln Val Arg Ile Lys Ser Gly Pro Phe Ala
130 135 140
Asn Gln Val Gly Glu Val Gln Glu Ile Glu Thr Asp Lys Phe Lys Leu
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Phe Asp Gln Ile Glu Lys Leu
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<210> 11
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<212> DNA

<213> Staphylococcus aureus

<400> 11

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<212> PRT

<213> Staphylococcus aureus

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          20             25             30

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Lys Asn Tyr Val Gln Ser His Ser Phe Ile Lys Ser Leu Val Leu Gly
          35             40             45

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Ile Ser Gly Gly Gln Asp Ser Thr Leu Val Gly Lys Leu Val Gln Met
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Ser Val Asn Glu Leu Arg Glu Glu Gly Ile Asp Cys Thr Phe Ile Ala
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Val Lys Leu Pro Tyr Gly Val Gln Lys Asp Ala Asp Glu Val Glu Gln
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Ala Leu Arg Phe Ile Glu Pro Asp Glu Ile Val Thr Val Asn Ile Lys
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          130            135            140

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Asp His Ser Ala Glu Asn Ile Thr Gly Phe Tyr Thr Lys Tyr Gly Asp
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Gly Ala Ala Asp Ile Ala Pro Ile Phe Gly Leu Asn Lys Arg Gln Gly
180 185 190

Arg Gln Leu Leu Ala Tyr Leu Gly Ala Pro Lys Glu Leu Tyr Glu Lys
195 200 205

Thr Pro Thr Ala Asp Leu Glu Asp Asp Lys Pro Gln Leu Pro Asp Glu
210 215 220

Asp Ala Leu Gly Val Thr Tyr Glu Ala Ile Asp Asn Tyr Leu Glu Gly
225 230 235 240

Lys Pro Val Thr Pro Glu Glu Gln Lys Val Ile Glu Asn His Tyr Ile
245 250 255

Arg Asn Ala His Lys Arg Glu Leu Ala Tyr Thr Arg Tyr Thr Trp Pro
260 265 270

Lys Ser

<210> 13
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<212> DNA
<213> Staphylococcus aureus

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<212> PRT
<213> Staphylococcus aureus

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Val Met Ile Glu Arg Gly Ile Pro Gly Gly Gln Met Ala Asn Thr Glu
 35 40 45
 Glu Val Glu Asn Phe Pro Gly Phe Glu Met Ile Thr Gly Pro Asp Leu
 50 55 60
 Ser Thr Lys Met Phe Glu His Ala Lys Lys Phe Gly Ala Val Tyr Gln
 65 70 75 80
 Tyr Gly Asp Ile Lys Ser Val Glu Asp Lys Gly Glu Tyr Lys Val Ile
 85 90 95
 Asn Phe Gly Asn Lys Glu Leu Thr Ala Lys Ala Val Ile Ile Ala Thr
 100 105 110
 Gly Ala Glu Tyr Lys Lys Ile Gly Val Pro Gly Glu Gln Glu Leu Gly
 115 120 125
 Gly Arg Gly Val Ser Tyr Cys Ala Val Cys Asp Gly Ala Phe Phe Lys
 130 135 140
 Asn Lys Arg Leu Phe Val Ile Gly Gly Gly Asp Ser Ala Val Glu Glu
 145 150 155 160
 Gly Thr Phe Leu Thr Lys Phe Ala Asp Lys Val Thr Ile Val His Arg
 165 170 175
 Arg Asp Glu Leu Arg Ala Gln Arg Ile Leu Gln Asp Arg Ala Phe Lys
 180 185 190
 Asn Asp Lys Ile Asp Phe Ile Trp Ser His Thr Leu Lys Ser Ile Asn
 195 200 205
 Glu Lys Asp Gly Lys Val Gly Ser Val Thr Leu Thr Ser Thr Lys Asp
 210 215 220
 Gly Ser Glu Glu Thr His Glu Ala Asp Gly Val Phe Ile Tyr Ile Gly
 225 230 235 240
 Met Lys Pro Leu Thr Ala Pro Phe Lys Asp Leu Gly Ile Thr Asn Asp
 245 250 255
 Val Gly Tyr Ile Val Thr Lys Asp Asp Met Thr Thr Ser Val Pro Gly
 260 265 270
 Ile Phe Ala Ala Gly Asp Val Arg Asp Lys Gly Leu Arg Gln Ile Val
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<210> 15
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 <212> DNA
 <213> Staphylococcus aureus

<400> 15

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cctgaattgg catttaaatt aggaagatac ggtggctatg ttctagcaca taataaaggt 120
gaaaaacacc cacgtgtact tgtaggctgc gatactagag ttccaggtga aatggttagaa 180
tcagcattaa tagctgggtt gatttcaatt ggtgcagaag tgatgcgatt aggtattatt 240
tcaacaccag gtgttgcata tttaacacgc gatatgggtg cagagttagg tgtaatgatt 300
tcagcctctc ataatccagt tgcagataat ggtattaaat tctttggatc agatgggttt 360
aaactatcag atgaacaaga aaatgaaatt gaagcattat tggatcaaga aaaccagaa 420
ttaccaagac cagttggcaa tgatattgta cattattcag attactttga aggggcacaa 480
aaatatttga gctattttaa atcaacagta gatgttaact ttgaagggtt gaaaattgct 540
ttagatgggtg caaatgggtc aacatcatca ctagcgccat tcttatttgg tgacttagaa 600
gcagatactg aaacaattgg atgtagtcct gatggatata atatcaatga gaaatgtggc 660
tctacacatc ctgaaaaatt agctgaaaaa gtagttgaaa ctgaaagtga ttttgggtta 720
gcatttgacg gcgatggaga cagaatcata gcagtagatg agaatgggtc aatcggtgac 780
ggtgaccaa ttatgtttat tattgggtcaa gaaatgcata aaaatcaaga attgaataat 840
gacatgattg tttctactgt tatgagtaat ttaggttttt acaaagcgct tgaacaagaa 900
ggaattaaat ctaataaaac taaagttggc gacagatatg tagtagaaga aatgcgtcgc 960
ggtaattata acttaggtgg agaacaatct ggacatatcg ttatgatgga ttacaatata 1020
actggtgatg gtttattaac tgggtattcaa ttagcttctg taataaaaat gactggtaaa 1080
tcactaagtg aattagctgg acaaatgaaa aaatatccac aatcattaat taacgtacgc 1140
gtaacagata aatatcgtgt tgaagaaaat gttgacgtta aagaagttat gactaaagta 1200
gaagtagaaa tgaatggaga aggtcgaatt ttagtaagac cttctggaac agaaccatta 1260
gttcgtgtca tggttgaagc agcaactgat gaagatgctg aaagatttgc acaacaaata 1320
gctgatgtgg ttcaagataa aatgggatta gataaa
1356
```

<210> 16

<211> 452

<212> PRT

<213> Staphylococcus aureus

<400> 16

```
Met Gly Gly Lys Tyr Phe Gly Thr Asp Gly Val Arg Gly Val Ala Asn
  1              5              10              15
```

```
Gln Glu Leu Thr Pro Glu Leu Ala Phe Lys Leu Gly Arg Tyr Gly Gly
      20              25              30
```

```
Tyr Val Leu Ala His Asn Lys Gly Glu Lys His Pro Arg Val Leu Val
      35              40              45
```

```
Gly Arg Asp Thr Arg Val Ser Gly Glu Met Leu Glu Ser Ala Leu Ile
      50              55              60
```

```
Ala Gly Leu Ile Ser Ile Gly Ala Glu Val Met Arg Leu Gly Ile Ile
      65              70              75              80
```

```
Ser Thr Pro Gly Val Ala Tyr Leu Thr Arg Asp Met Gly Ala Glu Leu
      85              90              95
```

```
Gly Val Met Ile Ser Ala Ser His Asn Pro Val Ala Asp Asn Gly Ile
      100             105             110
```

```
Lys Phe Phe Gly Ser Asp Gly Phe Lys Leu Ser Asp Glu Gln Glu Asn
      115             120             125
```

```
Glu Ile Glu Ala Leu Leu Asp Gln Glu Asn Pro Glu Leu Pro Arg Pro
      130             135             140
```

Val Gly Asn Asp Ile Val His Tyr Ser Asp Tyr Phe Glu Gly Ala Gln
 145 150 155 160
 Lys Tyr Leu Ser Tyr Leu Lys Ser Thr Val Asp Val Asn Phe Glu Gly
 165 170 175
 Leu Lys Ile Ala Leu Asp Gly Ala Asn Gly Ser Thr Ser Ser Leu Ala
 180 185 190
 Pro Phe Leu Phe Gly Asp Leu Glu Ala Asp Thr Glu Thr Ile Gly Cys
 195 200 205
 Ser Pro Asp Gly Tyr Asn Ile Asn Glu Lys Cys Gly Ser Thr His Pro
 210 215 220
 Glu Lys Leu Ala Glu Lys Val Val Glu Thr Glu Ser Asp Phe Gly Leu
 225 230 235 240
 Ala Phe Asp Gly Asp Gly Asp Arg Ile Ile Ala Val Asp Glu Asn Gly
 245 250 255
 Gln Ile Val Asp Gly Asp Gln Ile Met Phe Ile Ile Gly Gln Glu Met
 260 265 270
 His Lys Asn Gln Glu Leu Asn Asn Asp Met Ile Val Ser Thr Val Met
 275 280 285
 Ser Asn Leu Gly Phe Tyr Lys Ala Leu Glu Gln Glu Gly Ile Lys Ser
 290 295 300
 Asn Lys Thr Lys Val Gly Asp Arg Tyr Val Val Glu Glu Met Arg Arg
 305 310 315 320
 Gly Asn Tyr Asn Leu Gly Gly Glu Gln Ser Gly His Ile Val Met Met
 325 330 335
 Asp Tyr Asn Thr Thr Gly Asp Gly Leu Leu Thr Gly Ile Gln Leu Ala
 340 345 350
 Ser Val Ile Lys Met Thr Gly Lys Ser Leu Ser Glu Leu Ala Gly Gln
 355 360 365
 Met Lys Lys Tyr Pro Gln Ser Leu Ile Asn Val Arg Val Thr Asp Lys
 370 375 380
 Tyr Arg Val Glu Glu Asn Val Asp Val Lys Glu Val Met Thr Lys Val
 385 390 395 400
 Glu Val Glu Met Asn Gly Glu Gly Arg Ile Leu Val Arg Pro Ser Gly
 405 410 415
 Thr Glu Pro Leu Val Arg Val Met Val Glu Ala Ala Thr Asp Glu Asp
 420 425 430
 Ala Glu Arg Phe Ala Gln Gln Ile Ala Asp Val Val Gln Asp Lys Met
 435 440 445
 Gly Leu Asp Lys
 450

<210> 17
 <211> 1359
 <212> DNA
 <213> Staphylococcus aureus

<400> 17
 atgggtttca tgcgaagaca cgcgataatt ttggcagcag gttaaaggcac aagaatgaaa 60
 tctaaaaagt ataaagtgtc acacgaggtt gctgggaaac ctatggtcga acatgtattg 120
 gaaagtgtga aaggctctgg tgctgatcaa gttgtaacca tcgtaggaca tgggtgctgaa 180
 agtgtaaaag gacatttagg cgagcggttct ttatacagtt ttcaagagga acaactcggg 240
 actgcgcatg cagtgcacaaat ggcgaaatca cacttagaag acaaggaagg tacgacaatc 300
 gttgtatgtg gtgacacacc gctcatcaca aaggaaacat tagtaacatt gattgcgcat 360
 cacgaggatg ctaatgtcca agcaactgta ttatctgcat cgattcaaca accatatgga 420
 tacggaagaa tcgttcgaaa tgcgtcaggt cgtttagaac gcatagttga agagaaagat 480
 gcaacgcaag ctgaaaagga tattaatgaa attagttcag gtatttttgc gtttaataat 540
 aaaacgttgt ttgaaaaatt aacacaagtg aaaaatgata atgcgcaagg tgaatattac 600
 ctccctgatg tattgtcgtt aatttttaaat gatggcggca tcgtagaagt ctatcgtacc 660
 aatgatgttg aagaaatcat ggggtgtaaat gatcggtgtaa tgcttagtca ggctgagaag 720
 gcgatgcaac gtcgtacgaa tcattatcac atgctaaatg gtgtgacaat catcgatcct 780
 gacagcactt atattgggtcc agacgttaca attggtagtg atacagtcac tgaaccaggc 840
 gtacgaatta atgggtcgtac agaaattggc gaagatgttg ttattgggtca gtactctgaa 900
 attaacaata gtacgattga aaatgggtgca tgtattcaac agtctgttgt taatgatgct 960
 agcgtaggag cgaatactaa ggtcggaccg tttgcgcaat tgagaccagg cgcgcaatta 1020
 ggtgcagatg ttaagggttg aaattttgta gaaattaaaa aagcagatct taaagatggg 1080
 gccaaaggtt cacatttaag ttatattggc gatgctgtaa ttggcgaacg tactaatatt 1140
 ggttgcgga cgtattacagt taactatgat ggtgaaaata aattttaaaac tatcgtcggc 1200
 aaagattcat ttgtagggtg caatgttaat ttagtagcac ctgtaacaat tgggtgatgat 1260
 gtattgggtg cagctggttc cacaatcaca gatgacgtac caaatgacag ttttagctgtg 1320
 gcaagagcaa gacaaacaac aaaagaagga tataggaaa 1359

<210> 18
 <211> 453
 <212> PRT
 <213> Staphylococcus aureus

<400> 18
 Met Gly Phe Met Arg Arg His Ala Ile Ile Leu Ala Ala Gly Lys Gly
 1 5 10 15
 Thr Arg Met Lys Ser Lys Lys Tyr Lys Val Leu His Glu Val Ala Gly
 20 25 30
 Lys Pro Met Val Glu His Val Leu Glu Ser Val Lys Gly Ser Gly Val
 35 40 45
 Asp Gln Val Val Thr Ile Val Gly His Gly Ala Glu Ser Val Lys Gly
 50 55 60
 His Leu Gly Glu Arg Ser Leu Tyr Ser Phe Gln Glu Glu Gln Leu Gly
 65 70 75 80
 Thr Ala His Ala Val Gln Met Ala Lys Ser His Leu Glu Asp Lys Glu
 85 90 95
 Gly Thr Thr Ile Val Val Cys Gly Asp Thr Pro Leu Ile Thr Lys Glu
 100 105 110
 Thr Leu Val Thr Leu Ile Ala His His Glu Asp Ala Asn Ala Gln Ala
 115 120 125

Thr Val Leu Ser Ala Ser Ile Gln Gln Pro Tyr Gly Tyr Gly Arg Ile
 130 135 140
 Val Arg Asn Ala Ser Gly Arg Leu Glu Arg Ile Val Glu Glu Lys Asp
 145 150 155 160
 Ala Thr Gln Ala Glu Lys Asp Ile Asn Glu Ile Ser Ser Gly Ile Phe
 165 170 175
 Ala Phe Asn Asn Lys Thr Leu Phe Glu Lys Leu Thr Gln Val Lys Asn
 180 185 190
 Asp Asn Ala Gln Gly Glu Tyr Tyr Leu Pro Asp Val Leu Ser Leu Ile
 195 200 205
 Leu Asn Asp Gly Gly Ile Val Glu Val Tyr Arg Thr Asn Asp Val Glu
 210 215 220
 Glu Ile Met Gly Val Asn Asp Arg Val Met Leu Ser Gln Ala Glu Lys
 225 230 235 240
 Ala Met Gln Arg Arg Thr Asn His Tyr His Met Leu Asn Gly Val Thr
 245 250 255
 Ile Ile Asp Pro Asp Ser Thr Tyr Ile Gly Pro Asp Val Thr Ile Gly
 260 265 270
 Ser Asp Thr Val Ile Glu Pro Gly Val Arg Ile Asn Gly Arg Thr Glu
 275 280 285
 Ile Gly Glu Asp Val Val Ile Gly Gln Tyr Ser Glu Ile Asn Asn Ser
 290 295 300
 Thr Ile Glu Asn Gly Ala Cys Ile Gln Gln Ser Val Val Asn Asp Ala
 305 310 315 320
 Ser Val Gly Ala Asn Thr Lys Val Gly Pro Phe Ala Gln Leu Arg Pro
 325 330 335
 Gly Ala Gln Leu Gly Ala Asp Val Lys Val Gly Asn Phe Val Glu Ile
 340 345 350
 Lys Lys Ala Asp Leu Lys Asp Gly Ala Lys Val Ser His Leu Ser Tyr
 355 360 365
 Ile Gly Asp Ala Val Ile Gly Glu Arg Thr Asn Ile Gly Cys Gly Thr
 370 375 380
 Ile Thr Val Asn Tyr Asp Gly Glu Asn Lys Phe Lys Thr Ile Val Gly
 385 390 395 400
 Lys Asp Ser Phe Val Gly Cys Asn Val Asn Leu Val Ala Pro Val Thr
 405 410 415
 Ile Gly Asp Asp Val Leu Val Ala Ala Gly Ser Thr Ile Thr Asp Asp
 420 425 430
 Val Pro Asn Asp Ser Leu Ala Val Ala Arg Ala Arg Gln Thr Thr Lys
 435 440 445

Glu Gly Tyr Arg Lys

450

<210> 19

<211> 1317

<212> DNA

<213> Staphylococcus aureus

<400> 19

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atggggccca aaatagtcgt agtcggagca gtcgctggcg gtgcaacatg tgccagccaa 60
attcgacgtt tagataaaga aagtgcatt attatTTTTTg aaaaagatcg tgatatgagc 120
tttgctaatt gtgcattgcc ttatgtcatt ggcgaagttg ttgaagatag aagatatgct 180
ttagcgtata cacctgaaaa attttatgat agaaagcaaa ttacagtaaa aacttatcat 240
gaagttattg caatcaatga tgaaagacaa actgtatctg tattaatag aaagacaaac 300
gaacaatttg aagaatctta cgataaaactc attttaagcc ctggtgcaag tgcaaatagc 360
cttggttttg aaagtgcatt tacattttaca cttagaaatt tagaagacac tgatgctatc 420
gatcaattca tcaaagcaaa tcaagttgat aaagtattgg ttgtaggtgc aggttatgtt 480
tcattagaag ttcttgaaaa tctttatgaa cgtggttttac accctacttt aattcatcga 540
tctgataaga taaataaatt aatggatgcc gacatgaatc aacctatact tgatgaatta 600
gataagcggg agattccata ccgttttaaat gaggaattaa atgctatcaa tggaaatgaa 660
attacattta aatcaggaaa agttgaacat tacgatatga ttattgaagg tgcggtact 720
caccccaatt caaaattttat cgaaagtcca aatatcaaac ttgatcgaaa aggtttcata 780
ccggtaaacg ataaatttga aacaaatggt ccaaacattt atgcaatagg cgatattgca 840
acatcacatt atcgacatgt cgatctaccg gctagtgttc ctttagcttg gggcgctcac 900
cgtgcagcaa gtattgttgc cgaacaaatt gctggaaatg acactattga attcaaaggc 960
ttcttaggca acaatattgt gaagttcttt gattatacat ttgcgagtgt cggcggttaa 1020
ccaaacgaac taaagcaatt tgactataaa atggtagaag tcaactcaagg tgcacacgcg 1080
aattattacc caggaaattc ccctttacac ttaagagtat attatgacac ttcaaaccgt 1140
cagattttta gagcagctgc agtaggaaaa gaaggtgcag ataaacgtat tgatgtacta 1200
tcgatggcaa tgatgaacca gctaactgta gatgagttaa ctgagtttga agtggcttat 1260
gcaccaccat atagccaccc taaagattta atcaatatga ttggttacia agctaaa 1317
```

<210> 20

<211> 439

<212> PRT

<213> Staphylococcus aureus

<400> 20

```
Met Gly Pro Lys Ile Val Val Val Gly Ala Val Ala Gly Gly Ala Thr
  1             5             10             15
```

```
Cys Ala Ser Gln Ile Arg Arg Leu Asp Lys Glu Ser Asp Ile Ile Ile
      20             25             30
```

```
Phe Glu Lys Asp Arg Asp Met Ser Phe Ala Asn Cys Ala Leu Pro Tyr
      35             40             45
```

```
Val Ile Gly Glu Val Val Glu Asp Arg Arg Tyr Ala Leu Ala Tyr Thr
      50             55             60
```

```
Pro Glu Lys Phe Tyr Asp Arg Lys Gln Ile Thr Val Lys Thr Tyr His
      65             70             75             80
```

```
Glu Val Ile Ala Ile Asn Asp Glu Arg Gln Thr Val Ser Val Leu Asn
      85             90             95
```

```
Arg Lys Thr Asn Glu Gln Phe Glu Glu Ser Tyr Asp Lys Leu Ile Leu
      100            105            110
```


Ser Pro Gly Ala Ser Ala Asn Ser Leu Gly Phe Glu Ser Asp Ile Thr
 115 120 125
 Phe Thr Leu Arg Asn Leu Glu Asp Thr Asp Ala Ile Asp Gln Phe Ile
 130 135 140
 Lys Ala Asn Gln Val Asp Lys Val Leu Val Val Gly Ala Gly Tyr Val
 145 150 155 160
 Ser Leu Glu Val Leu Glu Asn Leu Tyr Glu Arg Gly Leu His Pro Thr
 165 170 175
 Leu Ile His Arg Ser Asp Lys Ile Asn Lys Leu Met Asp Ala Asp Met
 180 185 190
 Asn Gln Pro Ile Leu Asp Glu Leu Asp Lys Arg Glu Ile Pro Tyr Arg
 195 200 205
 Leu Asn Glu Glu Ile Asn Ala Ile Asn Gly Asn Glu Ile Thr Phe Lys
 210 215 220
 Ser Gly Lys Val Glu His Tyr Asp Met Ile Ile Glu Gly Val Gly Thr
 225 230 235 240
 His Pro Asn Ser Lys Phe Ile Glu Ser Ser Asn Ile Lys Leu Asp Arg
 245 250 255
 Lys Gly Phe Ile Pro Val Asn Asp Lys Phe Glu Thr Asn Val Pro Asn
 260 265 270
 Ile Tyr Ala Ile Gly Asp Ile Ala Thr Ser His Tyr Arg His Val Asp
 275 280 285
 Leu Pro Ala Ser Val Pro Leu Ala Trp Gly Ala His Arg Ala Ala Ser
 290 295 300
 Ile Val Ala Glu Gln Ile Ala Gly Asn Asp Thr Ile Glu Phe Lys Gly
 305 310 315 320
 Phe Leu Gly Asn Asn Ile Val Lys Phe Phe Asp Tyr Thr Phe Ala Ser
 325 330 335
 Val Gly Val Lys Pro Asn Glu Leu Lys Gln Phe Asp Tyr Lys Met Val
 340 345 350
 Glu Val Thr Gln Gly Ala His Ala Asn Tyr Tyr Pro Gly Asn Ser Pro
 355 360 365
 Leu His Leu Arg Val Tyr Tyr Asp Thr Ser Asn Arg Gln Ile Leu Arg
 370 375 380
 Ala Ala Ala Val Gly Lys Glu Gly Ala Asp Lys Arg Ile Asp Val Leu
 385 390 395 400
 Ser Met Ala Met Met Asn Gln Leu Thr Val Asp Glu Leu Thr Glu Phe
 405 410 415
 Glu Val Ala Tyr Ala Pro Pro Tyr Ser His Pro Lys Asp Leu Ile Asn
 420 425 430

Met Ile Gly Tyr Lys Ala Lys
435

<210> 21
<211> 1353
<212> DNA
<213> Staphylococcus aureus

<400> 21
atgaaagacg aacaattata ttatcttgag aaatcgccag tatttaaagc gatgatgcat 60
ttctcattgc caatgatgat agggacttta ttaagcgta tttatggcat attaaatatt 120
tactttatag gatttttaga agatagccac atgatttctg ctatctctct aacactgccca 180
gtatttgcta tcttaatggg gttaggtaat ttatttggcg ttgggtgcagg aacttatatt 240
tcacgtttat taggtgcgaa agactatagt aagagtaaat ttgtaagtag tttctctatt 300
tatgggtggta ttgcactagg acttatcgtg attttagtta ctttaccatt cagtgatcaa 360
atcgagcaaa ttttaggggc gagagggtgaa acgttagctt taacaagtaa ttatttgaaa 420
gtaatgtttt taagtgcacc ttttgtaatt ttgttcttca tattagaaca atttgcacgt 480
gcaattgggg caccaatggt ttctatgatt ggtatgttag ctagtgtagg cttaaattatt 540
atttttagatc caattttaat ttttgggttt gatttaaacg ttgttgggtgc agctttgggt 600
actgcaatca gtaatgttgc tgctgctctg ttctttatca tttattttat gaaaaatagt 660
gacgttgtgt cagttaatat taaacttgcg aaacctaata aagaaatgct ttctgaaatc 720
tttaaaatcg gtattcctgc atttttaatg agtatcttaa tgggattcac aggtattagt 780
ttaaatttat ttttagcaca ttatggaaac ttccgcgattg caagttatgg tatctcattt 840
agacttgctg aatttccaga acttattatc atgggattat gtgaagggtg tgtaccacta 900
attgcatata actttatggc aaataaaggc cgtatgaaag acgttatcaa agcagttatc 960
atgtctatcg gcgttatctt tgttgtatgt atgagtgcgt tatttacaat tggacatcat 1020
atggctcgac tatttactac tgatcaagcc attgttgaga tggcgacatt tattttgaaa 1080
gtaacaatgg catcattatt attaaatggt ataggtttct tgtttactgg tatgcttcaa 1140
gcgactgggc aaggctcgtg tgctacaatt atggccattt tacaagggtgc aattatcatt 1200
ccagtattat ttattatgaa tgctttgttt ggactaacag gtgtcatttg gtcattatta 1260
attgctgagt cactttgtgc ttttagcagca atgttaatcg tctattttatt acgtgatcgt 1320
ttgacagttg atacatctga attaatagaa ggt 1353

<210> 22
<211> 451
<212> PRT
<213> Staphylococcus aureus

<400> 22
Met Lys Asp Glu Gln Leu Tyr Tyr Phe Glu Lys Ser Pro Val Phe Lys
1 5 10 15
Ala Met Met His Phe Ser Leu Pro Met Met Ile Gly Thr Leu Leu Ser
20 25 30
Val Ile Tyr Gly Ile Leu Asn Ile Tyr Phe Ile Gly Phe Leu Glu Asp
35 40 45
Ser His Met Ile Ser Ala Ile Ser Leu Thr Leu Pro Val Phe Ala Ile
50 55 60
Leu Met Gly Leu Gly Asn Leu Phe Gly Val Gly Ala Gly Thr Tyr Ile
65 70 75 80
Ser Arg Leu Leu Gly Ala Lys Asp Tyr Ser Lys Ser Lys Phe Val Ser
85 90 95

Ser Phe Ser Ile Tyr Gly Gly Ile Ala Leu Gly Leu Ile Val Ile Leu
 100 105 110
 Val Thr Leu Pro Phe Ser Asp Gln Ile Ala Ala Ile Leu Gly Ala Arg
 115 120 125
 Gly Glu Thr Leu Ala Leu Thr Ser Asn Tyr Leu Lys Val Met Phe Leu
 130 135 140
 Ser Ala Pro Phe Val Ile Leu Phe Phe Ile Leu Glu Gln Phe Ala Arg
 145 150 155 160
 Ala Ile Gly Ala Pro Met Val Ser Met Ile Gly Met Leu Ala Ser Val
 165 170 175
 Gly Leu Asn Ile Ile Leu Asp Pro Ile Leu Ile Phe Gly Phe Asp Leu
 180 185 190
 Asn Val Val Gly Ala Ala Leu Gly Thr Ala Ile Ser Asn Val Ala Ala
 195 200 205
 Ala Leu Phe Phe Ile Ile Tyr Phe Met Lys Asn Ser Asp Val Val Ser
 210 215 220
 Val Asn Ile Lys Leu Ala Lys Pro Asn Lys Glu Met Leu Ser Glu Ile
 225 230 235 240
 Phe Lys Ile Gly Ile Pro Ala Phe Leu Met Ser Ile Leu Met Gly Phe
 245 250 255
 Thr Gly Leu Val Leu Asn Leu Phe Leu Ala His Tyr Gly Asn Phe Ala
 260 265 270
 Ile Ala Ser Tyr Gly Ile Ser Phe Arg Leu Val Gln Phe Pro Glu Leu
 275 280 285
 Ile Ile Met Gly Leu Cys Glu Gly Val Val Pro Leu Ile Ala Tyr Asn
 290 295 300
 Phe Met Ala Asn Lys Gly Arg Met Lys Asp Val Ile Lys Ala Val Ile
 305 310 315 320
 Met Ser Ile Gly Val Ile Phe Val Val Cys Met Ser Ala Val Phe Thr
 325 330 335
 Ile Gly His His Met Val Gly Leu Phe Thr Thr Asp Gln Ala Ile Val
 340 345 350
 Glu Met Ala Thr Phe Ile Leu Lys Val Thr Met Ala Ser Leu Leu Leu
 355 360 365
 Asn Gly Ile Gly Phe Leu Phe Thr Gly Met Leu Gln Ala Thr Gly Gln
 370 375 380
 Gly Arg Gly Ala Thr Ile Met Ala Ile Leu Gln Gly Ala Ile Ile Ile
 385 390 395 400
 Pro Val Leu Phe Ile Met Asn Ala Leu Phe Gly Leu Thr Gly Val Ile
 405 410 415

Trp Ser Leu Leu Ile Ala Glu Ser Leu Cys Ala Leu Ala Ala Met Leu
 420 425 430

Ile Val Tyr Leu Leu Arg Asp Arg Leu Thr Val Asp Thr Ser Glu Leu
 435 440 445

Ile Glu Gly
 450

<210> 23
 <211> 1479
 <212> DNA
 <213> Staphylococcus aureus

<400> 23
 ttggatgcaa gtacgttggt taagaaagta aaagtaaagc gtgtattggg ttcttttagaa 60
 caacaaatag atgatatcac tactgattca cgtacagcga gagaaggtag catttttgtc 120
 gcttcagttg gatatactgt agacagtcac aagttctgtc aaaatgtagc tgatcaaggg 180
 tgtaagttgg tagtgggtcaa taaagaacaa tcattaccag ctaacgtaac acaagtggtt 240
 gtgccggaca cattaagagt agctagtatt ctacgacaca cattatatga ttatccgagt 300
 catcagttag tgacatttgg tgtaacgggt acaaattggt aaacttctat tgcgacgatg 360
 attcatttaa ttcaaagaaa gttacaaaaa aatagtgcac atttaggaac taatgggttc 420
 caaattaatg aaacaaagac aaaagggtgca aatacgacac cagaaacagt ttctttaact 480
 aagaaaatta aagaagcagt tgatgcaggc gctgaatcta tgacattaga agtatcaagc 540
 catggcttag tattaggacg actgcgaggc gttgaatttg acgttgcaat attttcaaat 600
 ttaacacaag accattttaga ttttcatggc acaatggaag catacggaca cgcgaagtct 660
 ttattgttta gtcaattagg tgaagatttg tcgaaagaaa agtatgtcgt gttaaacaat 720
 gacgattcat tttctgagta ttaagaaca gtgacgcctt atgaagtatt tagttatgga 780
 attgatgagg aagcccaatt tatggctaaa aatattcaag aatctttaca aggtgtcagc 840
 tttgattttg taacgccttt tggaacttac ccagtaaaat cgccttatgt tggtaagttt 900
 aatatttcta atattatggc ggcaatgatt gcggtgtgga gtaaaggtag atcttttagaa 960
 acgattatta aagctgttga aaatttagaa cctgttgaag ggcgattaga agtttttagat 1020
 ccttcgttac ctattgattt aattatcgat tatgcacata cagctgatgg tatgaacaaa 1080
 ttaatcgatg cagtacagcc ttttgtaaag caaaagttga tatttttagt tggatggca 1140
 ggcgaacgtg atttaactaa aacgcctgaa atggggcgag ttgcctgtcg tgcagattat 1200
 gtcattttca caccggataa tccggcaaat gatgaccgga aaatgttaac ggcagaatta 1260
 gccaaagggtg caacacatca aaactatatt gaatttgatg atcgtgcaga agggataaaa 1320
 catgcaattg acatagctga gcctggggat actgtcgttt tagcatcaaa aggaagagaa 1380
 ccatatcaaa tcatgccagg gcatattaag gtgccacatc gagatgattt aattggcctt 1440
 gaagcagctt acaaaaagtt cgggtggtggc cctgttgat 1479

<210> 24
 <211> 493
 <212> PRT
 <213> Staphylococcus aureus

<400> 24
 Leu Asp Ala Ser Thr Leu Phe Lys Lys Val Lys Val Lys Arg Val Leu
 1 5 10 15

Gly Ser Leu Glu Gln Gln Ile Asp Asp Ile Thr Thr Asp Ser Arg Thr
 20 25 30

Ala Arg Glu Gly Ser Ile Phe Val Ala Ser Val Gly Tyr Thr Val Asp
 35 40 45

Ser His Lys Phe Cys Gln Asn Val Ala Asp Gln Gly Cys Lys Leu Val
 50 55 60

Val Val Asn Lys Glu Gln Ser Leu Pro Ala Asn Val Thr Gln Val Val
65 70 75 80
Val Pro Asp Thr Leu Arg Val Ala Ser Ile Leu Ala His Thr Leu Tyr
85 90 95
Asp Tyr Pro Ser His Gln Leu Val Thr Phe Gly Val Thr Gly Thr Asn
100 105 110
Gly Lys Thr Ser Ile Ala Thr Met Ile His Leu Ile Gln Arg Lys Leu
115 120 125
Gln Lys Asn Ser Ala Tyr Leu Gly Thr Asn Gly Phe Gln Ile Asn Glu
130 135 140
Thr Lys Thr Lys Gly Ala Asn Thr Thr Pro Glu Thr Val Ser Leu Thr
145 150 155 160
Lys Lys Ile Lys Glu Ala Val Asp Ala Gly Ala Glu Ser Met Thr Leu
165 170 175
Glu Val Ser Ser His Gly Leu Val Leu Gly Arg Leu Arg Gly Val Glu
180 185 190
Phe Asp Val Ala Ile Phe Ser Asn Leu Thr Gln Asp His Leu Asp Phe
195 200 205
His Gly Thr Met Glu Ala Tyr Gly His Ala Lys Ser Leu Leu Phe Ser
210 215 220
Gln Leu Gly Glu Asp Leu Ser Lys Glu Lys Tyr Val Val Leu Asn Asn
225 230 235 240
Asp Asp Ser Phe Ser Glu Tyr Leu Arg Thr Val Thr Pro Tyr Glu Val
245 250 255
Phe Ser Tyr Gly Ile Asp Glu Glu Ala Gln Phe Met Ala Lys Asn Ile
260 265 270
Gln Glu Ser Leu Gln Gly Val Ser Phe Asp Phe Val Thr Pro Phe Gly
275 280 285
Thr Tyr Pro Val Lys Ser Pro Tyr Val Gly Lys Phe Asn Ile Ser Asn
290 295 300
Ile Met Ala Ala Met Ile Ala Val Trp Ser Lys Gly Thr Ser Leu Glu
305 310 315 320
Thr Ile Ile Lys Ala Val Glu Asn Leu Glu Pro Val Glu Gly Arg Leu
325 330 335
Glu Val Leu Asp Pro Ser Leu Pro Ile Asp Leu Ile Ile Asp Tyr Ala
340 345 350
His Thr Ala Asp Gly Met Asn Lys Leu Ile Asp Ala Val Gln Pro Phe
355 360 365
Val Lys Gln Lys Leu Ile Phe Leu Val Gly Met Ala Gly Glu Arg Asp
370 375 380

Leu Thr Lys Thr Pro Glu Met Gly Arg Val Ala Cys Arg Ala Asp Tyr
 385 390 395 400
 Val Ile Phe Thr Pro Asp Asn Pro Ala Asn Asp Asp Pro Lys Met Leu
 405 410 415
 Thr Ala Glu Leu Ala Lys Gly Ala Thr His Gln Asn Tyr Ile Glu Phe
 420 425 430
 Asp Asp Arg Ala Glu Gly Ile Lys His Ala Ile Asp Ile Ala Glu Pro
 435 440 445
 Gly Asp Thr Val Val Leu Ala Ser Lys Gly Arg Glu Pro Tyr Gln Ile
 450 455 460
 Met Pro Gly His Ile Lys Val Pro His Arg Asp Asp Leu Ile Gly Leu
 465 470 475 480
 Glu Ala Ala Tyr Lys Lys Phe Gly Gly Gly Pro Val Asp
 485 490

<210> 25
 <211> 1356
 <212> DNA
 <213> Staphylococcus aureus

<400> 25
 atgattaatg ttacattaaa gcaaattcaa tcatggattc cttgtgaaat tgaagatcaa 60
 tttttaaatc aagagataaa tggagtcaca attgattcac gagcaatttc taaaaatatg 120
 ttattttatac cattttaaagg tgaaaatggt gacgggtcatc gctttgtctc taaagcatta 180
 caagatgggtg ctggggctgc tttttatcaa agaggggacac ctatagatga aaatgtaagc 240
 gggcctatta tatgggttga agacacatta acggcattac aacaattggc acaagcttac 300
 ttgagacatg taaaccctaa agtaattgcc gtcacagggt ctaatggtaa aacaacgact 360
 aaagatatga ttgaaagtgt attgcatacc gaattttaaag ttaagaaaac gcaaggtaat 420
 tacaataatg aaattggttt acctttaact atttttgaat tagataatga tactgaaata 480
 tcaatatattg agatggggat gtcaggtttc catgaaattg aatttctgtc aaacctcgct 540
 caaccagata ttgcagttat aactaatatt ggtgagtcac atatgcaaga tttagggttcg 600
 cgcgagggga ttgctaaagc taaatctgaa attacaatag gtctaaaaga taatgggtacg 660
 tttatatatg atggcgatga accattattg aaaccacatg ttaaagaagt tgaaaatgca 720
 aaatgtatta gtattgggtg tgctactgat aatgcattag tttgttctgt tgatgataga 780
 gatactacag gtatttcatt tacgattaat aataaagaac attacgatct gccaatatta 840
 ggaaagcata atatgaaaaa tgcgacgatt gccattgagg ttgggtcatga attaggtttg 900
 acatataaca caatctatca aaattttaaa aatgtcagct taactgggtat gcgtatggaa 960
 caacatacat tagaaaatga tattactgtg ataaatgatg cctataatgc aagtcctaca 1020
 agtatgagag cagctattga tacactgagt actttgacag ggcgtcgcat tctaatttta 1080
 ggagatgttt tagaattagg tgaaaatagc aaagaaatgc atatcgggtg aggtaattat 1140
 ttagaagaaa agcatataga tgtgttgat acgtttggta atgaagcgaa gtatatattat 1200
 gattcggggc agcaacatgt cgaaaaagca caacacttca attctaaaga cgatatgata 1260
 gaagttttta taaacgattt aaaagcgcat gaccgtgtat tagttaaagg atcacgtggt 1320
 atgaaattag aagaagtggg aaatgcttta atttca 1356

<210> 26
 <211> 452
 <212> PRT
 <213> Staphylococcus aureus

<400> 26
 Met Ile Asn Val Thr Leu Lys Gln Ile Gln Ser Trp Ile Pro Cys Glu
 1 5 10 15

Ile Glu Asp Gln Phe Leu Asn Gln Glu Ile Asn Gly Val Thr Ile Asp
 20 25 30
 Ser Arg Ala Ile Ser Lys Asn Met Leu Phe Ile Pro Phe Lys Gly Glu
 35 40 45
 Asn Val Asp Gly His Arg Phe Val Ser Lys Ala Leu Gln Asp Gly Ala
 50 55 60
 Gly Ala Ala Phe Tyr Gln Arg Gly Thr Pro Ile Asp Glu Asn Val Ser
 65 70 75 80
 Gly Pro Ile Ile Trp Val Glu Asp Thr Leu Thr Ala Leu Gln Gln Leu
 85 90 95
 Ala Gln Ala Tyr Leu Arg His Val Asn Pro Lys Val Ile Ala Val Thr
 100 105 110
 Gly Ser Asn Gly Lys Thr Thr Thr Lys Asp Met Ile Glu Ser Val Leu
 115 120 125
 His Thr Glu Phe Lys Val Lys Lys Thr Gln Gly Asn Tyr Asn Asn Glu
 130 135 140
 Ile Gly Leu Pro Leu Thr Ile Leu Glu Leu Asp Asn Asp Thr Glu Ile
 145 150 155 160
 Ser Ile Leu Glu Met Gly Met Ser Gly Phe His Glu Ile Glu Phe Leu
 165 170 175
 Ser Asn Leu Ala Gln Pro Asp Ile Ala Val Ile Thr Asn Ile Gly Glu
 180 185 190
 Ser His Met Gln Asp Leu Gly Ser Arg Glu Gly Ile Ala Lys Ala Lys
 195 200 205
 Ser Glu Ile Thr Ile Gly Leu Lys Asp Asn Gly Thr Phe Ile Tyr Asp
 210 215 220
 Gly Asp Glu Pro Leu Leu Lys Pro His Val Lys Glu Val Glu Asn Ala
 225 230 235 240
 Lys Cys Ile Ser Ile Gly Val Ala Thr Asp Asn Ala Leu Val Cys Ser
 245 250 255
 Val Asp Asp Arg Asp Thr Thr Gly Ile Ser Phe Thr Ile Asn Asn Lys
 260 265 270
 Glu His Tyr Asp Leu Pro Ile Leu Gly Lys His Asn Met Lys Asn Ala
 275 280 285
 Thr Ile Ala Ile Ala Val Gly His Glu Leu Gly Leu Thr Tyr Asn Thr
 290 295 300
 Ile Tyr Gln Asn Leu Lys Asn Val Ser Leu Thr Gly Met Arg Met Glu
 305 310 315 320
 Gln His Thr Leu Glu Asn Asp Ile Thr Val Ile Asn Asp Ala Tyr Asn
 325 330 335

Ala Ser Pro Thr Ser Met Arg Ala Ala Ile Asp Thr Leu Ser Thr Leu
 340 345 350

Thr Gly Arg Arg Ile Leu Ile Leu Gly Asp Val Leu Glu Leu Gly Glu
 355 360 365

Asn Ser Lys Glu Met His Ile Gly Val Gly Asn Tyr Leu Glu Glu Lys
 370 375 380

His Ile Asp Val Leu Tyr Thr Phe Gly Asn Glu Ala Lys Tyr Ile Tyr
 385 390 395 400

Asp Ser Gly Gln Gln His Val Glu Lys Ala Gln His Phe Asn Ser Lys
 405 410 415

Asp Asp Met Ile Glu Val Leu Ile Asn Asp Leu Lys Ala His Asp Arg
 420 425 430

Val Leu Val Lys Gly Ser Arg Gly Met Lys Leu Glu Glu Val Val Asn
 435 440 445

Ala Leu Ile Ser
 450

<210> 27
 <211> 399
 <212> DNA
 <213> Staphylococcus aureus

<400> 27
 atgacaatga cagatccaat cgcagatatg cttactcgtg taagaaacgc aaacatgggtg 60
 cgtcacgaga agttagaatt acctgcatca aatattaaaa aagaaattgc tgaaatctta 120
 aagagtgaag gtttcattaa aaatgttgaa tacgtagaag atgataaaca aggtgtactt 180
 cgttttattct taaaatatgg tcaaaacgat gagcgtgtta tcacaggatt aaaacgtatt 240
 tcaaaaccag gtttacgtgt ttatgcaaaa gctagcgaaa tgcctaaagt attaaatggt 300
 ttaggtattg cattagtatc aacttctgaa ggtgtaatca ctgacaaaaga agcaagaaaa 360
 cgtaatgttg gtggagaaat tatcgcatat gtttggttaa 399

<210> 28
 <211> 132
 <212> PRT
 <213> Staphylococcus aureus

<400> 28
 Met Thr Met Thr Asp Pro Ile Ala Asp Met Leu Thr Arg Val Arg Asn
 1 5 10 15
 Ala Asn Met Val Arg His Glu Lys Leu Glu Leu Pro Ala Ser Asn Ile
 20 25 30
 Lys Lys Glu Ile Ala Glu Ile Leu Lys Ser Glu Gly Phe Ile Lys Asn
 35 40 45
 Val Glu Tyr Val Glu Asp Asp Lys Gln Gly Val Leu Arg Leu Phe Leu
 50 55 60
 Lys Tyr Gly Gln Asn Asp Glu Arg Val Ile Thr Gly Leu Lys Arg Ile
 65 70 75 80

Ser Lys Pro Gly Leu Arg Val Tyr Ala Lys Ala Ser Glu Met Pro Lys
85 90 95

Val Leu Asn Gly Leu Gly Ile Ala Leu Val Ser Thr Ser Glu Gly Val
100 105 110

Ile Thr Asp Lys Glu Ala Arg Lys Arg Asn Val Gly Gly Glu Ile Ile
115 120 125

Ala Tyr Val Trp
130

<210> 29
<211> 267
<212> DNA
<213> Staphylococcus aureus

<400> 29
atggcaattt cacaagaacg taaaaacgaa atcattaaag aataccgtgt acacgaaact 60
gatactgggt caccagaagt acaaatcgct gtacttactg cagaaatcaa cgcagtaaac 120
gaacacttac gtacacacaa aaaagaccac cattcacgtc gtggattatt aaaaatggta 180
ggtcgtcgta gacatttatt aaactactta cgtagtaaag atattcaacg ttaccgtgaa 240
ttaattaaat cacttggcat ccgtcgt 267

<210> 30
<211> 89
<212> PRT
<213> Staphylococcus aureus

<400> 30
Met Ala Ile Ser Gln Glu Arg Lys Asn Glu Ile Ile Lys Glu Tyr Arg
1 5 10 15

Val His Glu Thr Asp Thr Gly Ser Pro Glu Val Gln Ile Ala Val Leu
20 25 30

Thr Ala Glu Ile Asn Ala Val Asn Glu His Leu Arg Thr His Lys Lys
35 40 45

Asp His His Ser Arg Arg Gly Leu Leu Lys Met Val Gly Arg Arg Arg
50 55 60

His Leu Leu Asn Tyr Leu Arg Ser Lys Asp Ile Gln Arg Tyr Arg Glu
65 70 75 80

Leu Ile Lys Ser Leu Gly Ile Arg Arg
85

<210> 31
<211> 666
<212> DNA
<213> Staphylococcus aureus

<400> 31
taaggaggga atactgtggg tcaaaaaatt aatccaatcg gacttcgtgt tggattatc 60
cgtgattggg aagctaaatg gtatgctgaa aaagacttcg cttcactttt acacgaagat 120
ttaaaaatcc gttaaatttat tgataatgaa ttaaaagaag catcagtttc tcacgtagag 180

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attgaacgtg ctgcaaaccg tatcaacatt gcaattcata ctggtaaacc tggatatgga 240
attggtaaag gcggttcaga aatcgaaaaa ttacgcaaca aattaaatgc gttactgat 300
aaaaaagtac acatcaacgt aattgaaatc aaaaaagttg atcttgacgc tcgtttagta 360
gctgaaaaca tcgcacgtca attagaaaac cgtgcttcat tccgtcgtgt acaaaaaaaa 420
gcaatcacta gagctatgaa acttggtgct aaagggtatca aaactcaagt atctgggtcgt 480
ttaggcggag ctgacatcgc tcgtgctgaa caatattcag aaggaaactgt tccacttcat 540
acgttacgtg ctgacatcga ttatgcacac gctgaagctg acactactta cggtaaatta 600
ggcgttaaag tatggattta tcgtggagaa gttcttcta ctaagaacac tagtggagga 660
ggaaaaa

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<210> 32

<211> 217

<212> PRT

<213> Staphylococcus aureus

<400> 32

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Val Gly Gln Lys Ile Asn Pro Ile Gly Leu Arg Val Gly Ile Ile Arg
  1             5             10             15

```

```

Asp Trp Glu Ala Lys Trp Tyr Ala Glu Lys Asp Phe Ala Ser Leu Leu
      20             25             30

```

```

His Glu Asp Leu Lys Ile Arg Lys Phe Ile Asp Asn Glu Leu Lys Glu
      35             40             45

```

```

Ala Ser Val Ser His Val Glu Ile Glu Arg Ala Ala Asn Arg Ile Asn
      50             55             60

```

```

Ile Ala Ile His Thr Gly Lys Pro Gly Met Val Ile Gly Lys Gly Gly
      65             70             75             80

```

```

Ser Glu Ile Glu Lys Leu Arg Asn Lys Leu Asn Ala Leu Thr Asp Lys
      85             90             95

```

```

Lys Val His Ile Asn Val Ile Glu Ile Lys Lys Val Asp Leu Asp Ala
      100            105            110

```

```

Arg Leu Val Ala Glu Asn Ile Ala Arg Gln Leu Glu Asn Arg Ala Ser
      115            120            125

```

```

Phe Arg Arg Val Gln Lys Gln Ala Ile Thr Arg Ala Met Lys Leu Gly
      130            135            140

```

```

Ala Lys Gly Ile Lys Thr Gln Val Ser Gly Arg Leu Gly Gly Ala Asp
      145            150            155            160

```

```

Ile Ala Arg Ala Glu Gln Tyr Ser Glu Gly Thr Val Pro Leu His Thr
      165            170            175

```

```

Leu Arg Ala Asp Ile Asp Tyr Ala His Ala Glu Ala Asp Thr Thr Tyr
      180            185            190

```

```

Gly Lys Leu Gly Val Lys Val Trp Ile Tyr Arg Gly Glu Val Leu Pro
      195            200            205

```

```

Thr Lys Asn Thr Ser Gly Gly Gly Lys
      210            215

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<210> 33
 <211> 498
 <212> DNA
 <213> Staphylococcus aureus

<400> 33
 atggctcgta gagaagaaga gacgaaagaa tttgaagaac gcgttggtac aatcaaccgt 60
 gtagcaaaaag ttgtaaaagg tggctcgctgt ttccggtttca ctgcattagt tgtagttgga 120
 gacaaaaaatg gtcgtgtagg tttcgggtact ggtaaagctc aagaggtacc agaagcaatc 180
 aaaaaagctg ttgaagcagc taaaaaagat ttagtagttg ttccacgtgt tgaaggtaca 240
 actccacaca caattactgg ccgttacggg tcaggaagcg tatttatgaa accggctgca 300
 cctgggtacag gagttatcgc tgggtggctc gttcgtgccg tacttgaatt agcaggtatc 360
 actgatatct taagtaaatt attaggatca aacacaccaa tcaacatggt tcgtgctaca 420
 atcgatgggt tacaaaacct taaaaatgct gaagatggtg cgaaattacg tggcaaaaaca 480
 gtagaagaat tatacaat 498

<210> 34
 <211> 166
 <212> PRT
 <213> Staphylococcus aureus

<400> 34
 Met Ala Arg Arg Glu Glu Glu Thr Lys Glu Phe Glu Glu Arg Val Val
 1 5 10 15
 Thr Ile Asn Arg Val Ala Lys Val Val Lys Gly Gly Arg Arg Phe Arg
 20 25 30
 Phe Thr Ala Leu Val Val Val Gly Asp Lys Asn Gly Arg Val Gly Phe
 35 40 45
 Gly Thr Gly Lys Ala Gln Glu Val Pro Glu Ala Ile Lys Lys Ala Val
 50 55 60
 Glu Ala Ala Lys Lys Asp Leu Val Val Val Pro Arg Val Glu Gly Thr
 65 70 75 80
 Thr Pro His Thr Ile Thr Gly Arg Tyr Gly Ser Gly Ser Val Phe Met
 85 90 95
 Lys Pro Ala Ala Pro Gly Thr Gly Val Ile Ala Gly Gly Pro Val Arg
 100 105 110
 Ala Val Leu Glu Leu Ala Gly Ile Thr Asp Ile Leu Ser Lys Ser Leu
 115 120 125
 Gly Ser Asn Thr Pro Ile Asn Met Val Arg Ala Thr Ile Asp Gly Leu
 130 135 140
 Gln Asn Leu Lys Asn Ala Glu Asp Val Ala Lys Leu Arg Gly Lys Thr
 145 150 155 160
 Val Glu Glu Leu Tyr Asn
 165

<210> 35
 <211> 390
 <212> DNA
 <213> Staphylococcus aureus

<400> 35
atggcacaag ttgaatatag aggcacaggc cgctcgtaaaa actcagtagc acgtgtacgt 60
ttagtaccag gtgaaggtaa catcacagtt aataaccgtg acgtacgcga atacttacca 120
ttcgaatcat taattttaga cttaaaccaa ccatttgatg taactgaaac taaaggtaac 180
tatgatgttt tagttaacgt tcatgggtggg ggtttcactg gacaagctca agctatccgt 240
cacggaatcg ctcgtgcatt attagaagca gatcctgaat acagagggtc tttaaaacgc 300
gctggattac ttactcgtga cccacgtatg aaagaacata aaaaaccagg tcttaaagca 360
gctcgtcgtt cacctcaatt ctcaaaacgt 390

<210> 36

<211> 130

<212> PRT

<213> Staphylococcus aureus

<400> 36

Met Ala Gln Val Glu Tyr Arg Gly Thr Gly Arg Arg Lys Asn Ser Val
1 5 10 15

Ala Arg Val Arg Leu Val Pro Gly Glu Gly Asn Ile Thr Val Asn Asn
20 25 30

Arg Asp Val Arg Glu Tyr Leu Pro Phe Glu Ser Leu Ile Leu Asp Leu
35 40 45

Asn Gln Pro Phe Asp Val Thr Glu Thr Lys Gly Asn Tyr Asp Val Leu
50 55 60

Val Asn Val His Gly Gly Gly Phe Thr Gly Gln Ala Gln Ala Ile Arg
65 70 75 80

His Gly Ile Ala Arg Ala Leu Leu Glu Ala Asp Pro Glu Tyr Arg Gly
85 90 95

Ser Leu Lys Arg Ala Gly Leu Leu Thr Arg Asp Pro Arg Met Lys Glu
100 105 110

His Lys Lys Pro Gly Leu Lys Ala Ala Arg Arg Ser Pro Gln Phe Ser
115 120 125

Lys Arg
130

<210> 37

<211> 306

<212> DNA

<213> Staphylococcus aureus

<400> 37

atggcaaaac aaaaaatcag aatcagatta aaggcttatg atcaccgcgt aattgatcaa 60
tcagcagaga agattgtaga aacagcgaaa cgttctggtg cagatgtttc tggaccaatt 120
ccgttaccaa ctgagaaatc agtttacaca atcatccgtg ccgtgcataa gtataaagat 180
tcacgtgaac aattcgaaca acgtacacac aaacgtttta tcgatattgt aaacccaaca 240
ccaaaaacag ttgacgcttt aatgggctta aacttaccat ctgggtgtaga catcgaaatc 300
aaatta 306

<210> 38

<211> 102

<212> PRT

<213> Staphylococcus aureus

<400> 38

Met Ala Lys Gln Lys Ile Arg Ile Arg Leu Lys Ala Tyr Asp His Arg
1 5 10 15

Val Ile Asp Gln Ser Ala Glu Lys Ile Val Glu Thr Ala Lys Arg Ser
20 25 30

Gly Ala Asp Val Ser Gly Pro Ile Pro Leu Pro Thr Glu Lys Ser Val
35 40 45

Tyr Thr Ile Ile Arg Ala Val His Lys Tyr Lys Asp Ser Arg Glu Gln
50 55 60

Phe Glu Gln Arg Thr His Lys Arg Leu Ile Asp Ile Val Asn Pro Thr
65 70 75 80

Pro Lys Thr Val Asp Ala Leu Met Gly Leu Asn Leu Pro Ser Gly Val
85 90 95

Asp Ile Glu Ile Lys Leu
100

<210> 39

<211> 267

<212> DNA

<213> Staphylococcus aureus

<400> 39

atggctaaga aatctaaaat agcaaaagag agaaaaagag aagagttagt aaataaatat 60
tacgaattac gtaaagaggtt aaaagcaaaa ggtgattacg aagcgtaaag aaaattacca 120
agagattcat cacctacacg tttaactaga agatgtaaag taactggaag acctagaggt 180
gtattacgta aatttgaaat gtctcgtatt gcgtttagag aacatgcgca caaaggacaa 240
attccaggtg ttaaaaaatc aagttgg 267

<210> 40

<211> 89

<212> PRT

<213> Staphylococcus aureus

<400> 40

Met Ala Lys Lys Ser Lys Ile Ala Lys Glu Arg Lys Arg Glu Glu Leu
1 5 10 15

Val Asn Lys Tyr Tyr Glu Leu Arg Lys Glu Leu Lys Ala Lys Gly Asp
20 25 30

Tyr Glu Ala Leu Arg Lys Leu Pro Arg Asp Ser Ser Pro Thr Arg Leu
35 40 45

Thr Arg Arg Cys Lys Val Thr Gly Arg Pro Arg Gly Val Leu Arg Lys
50 55 60

Phe Glu Met Ser Arg Ile Ala Phe Arg Glu His Ala His Lys Gly Gln
65 70 75 80

Ile Pro Gly Val Lys Lys Ser Ser Trp
85

<210> 41
 <211> 276
 <212> DNA
 <213> Staphylococcus aureus

<400> 41
 atggctcgta gtattaaaaa aggacctttc gtcgatgagc atttaatgaa aaaagttgaa 60
 gctcaagaag gaagcgaaaa gaaacaagta atcaaaacat ggtcacgctg ttctacaatt 120
 ttccctaatt tcatcggaca tacttttgca gtatacgacg gacgtaaaca cgtacctgta 180
 tatgtaactg aagatatggt aggtcataaa ttaggtgagt ttgctcctac tcgtacattc 240
 aaaggacacg ttgcagacga caagaaaaca agaaga 276

<210> 42
 <211> 92
 <212> PRT
 <213> Staphylococcus aureus

<400> 42
 Met Ala Arg Ser Ile Lys Lys Gly Pro Phe Val Asp Glu His Leu Met
 1 5 10 15
 Lys Lys Val Glu Ala Gln Glu Gly Ser Glu Lys Lys Gln Val Ile Lys
 20 25 30
 Thr Trp Ser Arg Arg Ser Thr Ile Phe Pro Asn Phe Ile Gly His Thr
 35 40 45
 Phe Ala Val Tyr Asp Gly Arg Lys His Val Pro Val Tyr Val Thr Glu
 50 55 60
 Asp Met Val Gly His Lys Leu Gly Glu Phe Ala Pro Thr Arg Thr Phe
 65 70 75 80
 Lys Gly His Val Ala Asp Asp Lys Lys Thr Arg Arg
 85 90

<210> 43
 <211> 183
 <212> DNA
 <213> Staphylococcus aureus

<400> 43
 atggctaataa cttcaatggt tgctaagcaa caaaaaaac aaaaatatgc agttcgtgaa 60
 tacactcggt gtgaacgttg tggcgcgtcca cattctgtat atcgtaaatt taaattatgc 120
 cgtatttgtt tccgtgaatt agcttacaaa ggccaaatcc ctggcggttcg taaagctagc 180
 tgg 183

<210> 44
 <211> 61
 <212> PRT
 <213> Staphylococcus aureus

<400> 44
 Met Ala Lys Thr Ser Met Val Ala Lys Gln Gln Lys Lys Gln Lys Tyr
 1 5 10 15

Ala Val Arg Glu Tyr Thr Arg Cys Glu Arg Cys Gly Arg Pro His Ser
 20 25 30

Val Tyr Arg Lys Phe Lys Leu Cys Arg Ile Cys Phe Arg Glu Leu Ala
 35 40 45

Tyr Lys Gly Gln Ile Pro Gly Val Arg Lys Ala Ser Trp
 50 55 60

<210> 45

<211> 699

<212> DNA

<213> Staphylococcus aureus

<400> 45

atggctagaa aagttgttgt agttgatgat gaaaaaccga ttgctgatat tttagaattt 60
 aacttaaaaa aagaaggata cgatgtgtac tgtgcatacg atggtaatga tgcagtcgac 120
 ttaatttatg aagaagaacc agacatcgta ttactagata tcatgttacc tggtcgtgat 180
 ggtatggaag tatgtcgtga agtgcgcaaa aaatacgaaa tgccaataat aatgcttact 240
 gctaaagatt cagaaattga taaagtgtt ggtttagaac taggtgcaga tgactatgta 300
 acgaaaccgt ttagtacgcg tgaattaatc gcacgtgtga aagcgaactt acgtcgtcat 360
 tactcacaac cagcacaaga cactggaaat gtaacgaatg aaatcacaat taaagatatt 420
 gtgatttate cagacgcata ttctattaaa aaacgtggcg aagatattga attaacacat 480
 cgtgaatttg aattgttcca ttatttatca aaacatatgg gacaagtaat gacacgtgaa 540
 catttattac aaacagtatg gggctatgat tactttggcg atgtacgtac ggtcgatgta 600
 acgattcgtc gtttacgtga aaagattgaa gatgatccgt cacatcctga atatattgtg 660
 acgcgtagag gcgttggata tttcctccaa caacatgag 699

<210> 46

<211> 233

<212> PRT

<213> Staphylococcus aureus

<400> 46

Met Ala Arg Lys Val Val Val Val Asp Asp Glu Lys Pro Ile Ala Asp
 1 5 10 15

Ile Leu Glu Phe Asn Leu Lys Lys Glu Gly Tyr Asp Val Tyr Cys Ala
 20 25 30

Tyr Asp Gly Asn Asp Ala Val Asp Leu Ile Tyr Glu Glu Glu Pro Asp
 35 40 45

Ile Val Leu Leu Asp Ile Met Leu Pro Gly Arg Asp Gly Met Glu Val
 50 55 60

Cys Arg Glu Val Arg Lys Lys Tyr Glu Met Pro Ile Ile Met Leu Thr
 65 70 75 80

Ala Lys Asp Ser Glu Ile Asp Lys Val Leu Gly Leu Glu Leu Gly Ala
 85 90 95

Asp Asp Tyr Val Thr Lys Pro Phe Ser Thr Arg Glu Leu Ile Ala Arg
 100 105 110

Val Lys Ala Asn Leu Arg Arg His Tyr Ser Gln Pro Ala Gln Asp Thr
 115 120 125

Gly Asn Val Thr Asn Glu Ile Thr Ile Lys Asp Ile Val Ile Tyr Pro
 130 135 140
 Asp Ala Tyr Ser Ile Lys Lys Arg Gly Glu Asp Ile Glu Leu Thr His
 145 150 155 160
 Arg Glu Phe Glu Leu Phe His Tyr Leu Ser Lys His Met Gly Gln Val
 165 170 175
 Met Thr Arg Glu His Leu Leu Gln Thr Val Trp Gly Tyr Asp Tyr Phe
 180 185 190
 Gly Asp Val Arg Thr Val Asp Val Thr Ile Arg Arg Leu Arg Glu Lys
 195 200 205
 Ile Glu Asp Asp Pro Ser His Pro Glu Tyr Ile Val Thr Arg Arg Gly
 210 215 220
 Val Gly Tyr Phe Leu Gln Gln His Glu
 225 230

<210> 47
 <211> 937
 <212> DNA
 <213> Staphylococcus aureus

<400> 47
 atgccattat ttttacaacc aattttaaaa acaaaattat ggggcggtca acgtctaagt 60
 gagtttggat atcaattaga caatgataca actgggggaa tgttggtgtg tgtcagcaca 120
 tccaaatggg acgagcgaga ttattaatgg accatatcaa ggtcaaacaat tagaccgtat 180
 ttggtcagaa catcgtgaat tgtttggtga tttcccaagc aaagattttc cgcttctaac 240
 taaaatagtg gatgcaagag aatcactttc tattcatgtg caccctgata attccttatgc 300
 ttatgagcat gaaaacgggc aatatggcaa atctgaatgt tggatatatta tagatgcaga 360
 agaagatgca gaaatagtta tagggacatt agcagagtct agagaagaag ttgcgaatca 420
 tgttcaacac ggaacgatag agtcgatact tagatatatt aaagtaaaac ctgggagaatt 480
 ctatttttatt ccagcaggaa cagtwcatac tatttcttca ggaatattag catacgaaac 540
 gatgcaatcg tcagacatta catatagact ttatgatctc aatcgtcaag ataatacaata 600
 taatgataga ccgttaaata ttgaaaaagc ttttagacgtt attcagtaca atgcaccatt 660
 acctaataatt ttgcctgaaa gcgaaattat tgaaaaccat aagtgtacac acattgtatc 720
 gaatgatttc tttacattgg ttaaatggga aatttctggc acgttaaatt atatgaagcc 780
 tagagagttc tgtttagtta cagtgttggg aggcgaaggg caaatgattg tctatggtga 840
 aattttcaaa ctgactactg gtacaaactt tattttgact tctgaagatt tggatagtgt 900
 ctttgaaggt gatttcacat tgatgattag ctatgtg 937

<210> 48
 <211> 312
 <212> PRT
 <213> Staphylococcus aureus

<400> 48
 Met Pro Leu Phe Leu Gln Pro Ile Leu Lys Thr Lys Leu Trp Gly Gly
 1 5 10 15
 Gln Arg Leu Ser Glu Phe Gly Tyr Gln Leu Asp Asn Asp Thr Thr Gly
 20 25 30
 Glu Cys Trp Cys Val Ser Ala His Pro Asn Gly Thr Ser Glu Ile Ile
 35 40 45

Asn Gly Pro Tyr Gln Gly Gln Thr Leu Asp Arg Ile Trp Ser Glu His
 50 55 60
 Arg Glu Leu Phe Gly Asp Phe Pro Ser Lys Asp Phe Pro Leu Leu Thr
 65 70 75 80
 Lys Ile Val Asp Ala Arg Glu Ser Leu Ser Ile His Val His Pro Asp
 85 90 95
 Asn Ser Tyr Ala Tyr Glu His Glu Asn Gly Gln Tyr Gly Lys Ser Glu
 100 105 110
 Cys Trp Tyr Ile Ile Asp Ala Glu Glu Asp Ala Glu Ile Val Ile Gly
 115 120 125
 Thr Leu Ala Glu Ser Arg Glu Glu Val Ala Asn His Val Gln His Gly
 130 135 140
 Thr Ile Glu Ser Ile Leu Arg Tyr Ile Lys Val Lys Pro Gly Glu Phe
 145 150 155 160
 Tyr Phe Ile Pro Ala Gly Thr Val His Thr Ile Ser Ser Gly Ile Leu
 165 170 175
 Ala Tyr Glu Thr Met Gln Ser Ser Asp Ile Thr Tyr Arg Leu Tyr Asp
 180 185 190
 Phe Asn Arg Gln Asp Asn Gln Tyr Asn Asp Arg Pro Leu Asn Ile Glu
 195 200 205
 Lys Ala Leu Asp Val Ile Gln Tyr Asn Ala Pro Leu Pro Asn Ile Leu
 210 215 220
 Pro-Glu Ser Glu Ile Ile Glu Asn His Lys Cys Thr His Ile Val Ser
 225 230 235 240
 Asn Asp Phe Phe Thr Leu Val Lys Trp Glu Ile Ser Gly Thr Leu Asn
 245 250 255
 Tyr Met Lys Pro Arg Glu Phe Cys Leu Val Thr Val Leu Glu Gly Glu
 260 265 270
 Gly Gln Met Ile Val Asp Gly Glu Ile Phe Lys Leu Thr Thr Gly Thr
 275 280 285
 Asn Phe Ile Leu Thr Ser Glu Asp Leu Asp Ser Val Phe Glu Gly Asp
 290 295 300
 Phe Thr Leu Met Ile Ser Tyr Val
 305 310

<210> 49

<211> 837

<212> DNA

<213> Staphylococcus aureus

<400> 49

atggctgtat tatatttagt gggcacacca attggttaatt tagcagatat tacttataga.60
 gcagttgatg tattgaaacg tgttgatatg attgcttgatg aagacactag agtaactagt 120

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aaactgtgta atcattatga tattccaact ccattaagtg catatcacga acataacaag 180
gataagcaga ctgcttttat cattgaacag ttagaattag gtcttgacgt tgcgctcgta 240
tctgatgctg gattgccctt aattagtgat cctggatacg aattagtagt ggcagccaga 300
gaagctaata ttaaagtaga gactgtgcct ggacctaata ctgggctgac ggctttgatg 360
gctagtggat taccttcata tgtatataca tttttaggat ttttgccacg aaaagagaaa 420
gaaaaaagtg ctgtattaga gcaacgtatg catgaaaata gcacattaat tatatacgaa 480
tcaccgcacg gtgtgacaga tacattaaaa acaattgcaa agatagatgc aacacgacaa 540
gtatcactag ggcgtgaatt aactaagaag ttcgaacaaa ttgtaactga tgatgtaaca 600
caattacaag cattgattca gcaaggcgat gtaccattga aaggcgaatt cgttatctta 660
attgaagggtg ctaaagcgaa caatgagata tcgtgggttg atgattttatc tatcaatgag 720
catgttgatc attatattca aacttcacag atgaaaccaa aacaagctat taaaaaagtt 780
gctgaagaac gacaacttaa aacgaatgaa gtatataata tttatcatca aataagt 837

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<210> 50

<211> 279

<212> PRT

<213> Staphylococcus aureus

<400> 50

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Met Ala Val Leu Tyr Leu Val Gly Thr Pro Ile Gly Asn Leu Ala Asp
  1             5             10             15

Ile Thr Tyr Arg Ala Val Asp Val Leu Lys Arg Val Asp Met Ile Ala
          20             25             30

Cys Glu Asp Thr Arg Val Thr Ser Lys Leu Cys Asn His Tyr Asp Ile
          35             40             45

Pro Thr Pro Leu Lys Ser Tyr His Glu His Asn Lys Asp Lys Gln Thr
          50             55             60

Ala Phe Ile Ile Glu Gln Leu Glu Leu Gly Leu Asp Val Ala Leu Val
          65             70             75             80

Ser Asp Ala Gly Leu Pro Leu Ile Ser Asp Pro Gly Tyr Glu Leu Val
          85             90             95

Val Ala Ala Arg Glu Ala Asn Ile Lys Val Glu Thr Val Pro Gly Pro
          100            105            110

Asn Ala Gly Leu Thr Ala Leu Met Ala Ser Gly Leu Pro Ser Tyr Val
          115            120            125

Tyr Thr Phe Leu Gly Phe Leu Pro Arg Lys Glu Lys Glu Lys Ser Ala
          130            135            140

Val Leu Glu Gln Arg Met His Glu Asn Ser Thr Leu Ile Ile Tyr Glu
          145            150            155            160

Ser Pro His Arg Val Thr Asp Thr Leu Lys Thr Ile Ala Lys Ile Asp
          165            170            175

Ala Thr Arg Gln Val Ser Leu Gly Arg Glu Leu Thr Lys Lys Phe Glu
          180            185            190

Gln Ile Val Thr Asp Asp Val Thr Gln Leu Gln Ala Leu Ile Gln Gln
          195            200            205

Gly Asp Val Pro Leu Lys Gly Glu Phe Val Ile Leu Ile Glu Gly Ala
          210            215            220

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Lys Ala Asn Asn Glu Ile Ser Trp Phe Asp Asp Leu Ser Ile Asn Glu
 225 230 235 240

His Val Asp His Tyr Ile Gln Thr Ser Gln Met Lys Pro Lys Gln Ala
 245 250 255

Ile Lys Lys Val Ala Glu Glu Arg Gln Leu Lys Thr Asn Glu Val Tyr
 260 265 270

Asn Ile Tyr His Gln Ile Ser
 275

<210> 51
 <211> 624
 <212> DNA
 <213> Staphylococcus aureus

<400> 51
 atgaaatttg gaaaaacaat cgcagtagta ttagcatcta gtgtcttgct tgcaggatgt 60
 actacggata aaaaagaaat taaggcatat ttaaagcaag tggataaaat taaagatgat 120
 gaagaaccaa ttaaaactgt tggtaagaaa attgctgaat tagatgagaa aaagaaaaaa 180
 ttaactgaag atgtcaatag taaagatata gcagttcgcg gtaaagcagt aaaggattta 240
 attaaaaatg ccgatgatcg tctaaaggaa tttgaaaaag aagaagacgc aattaagaag 300
 tctgaacaag actttaagaa agcaaaaagt cacgttgata acattgataa tgatgttaaa 360
 cgtaaagaag taaaacaatt agatgatgta ttaaagaaa aatataagtt acacagtgat 420
 tacgcgaaag catataaaaa ggctgtaaac tcagagaaaa cattatttaa atattttaa 480
 caaatgacg cgacacaaca aggtgttaac gaaaaatcaw aagcaataga acagaactat 540
 aaaaagttaa aagaagtatc agataagtat acaaaagtac taaataaggt tggtaaagaa 600
 aagcaagacg ttgatcaatt taaa 624

<210> 52
 <211> 208
 <212> PRT
 <213> Staphylococcus aureus

<220>
 <221> MISC_FEATURE
 <222> (174)..(174)
 <223> Xaa = any of the twenty naturally occurring L-amino acids

<400> 52
 Met Lys Phe Gly Lys Thr Ile Ala Val Val Leu Ala Ser Ser Val Leu
 1 5 10 15
 Leu Ala Gly Cys Thr Thr Asp Lys Lys Glu Ile Lys Ala Tyr Leu Lys
 20 25 30
 Gln Val Asp Lys Ile Lys Asp Asp Glu Glu Pro Ile Lys Thr Val Gly
 35 40 45
 Lys Lys Ile Ala Glu Leu Asp Glu Lys Lys Lys Lys Leu Thr Glu Asp
 50 55 60
 Val Asn Ser Lys Asp Thr Ala Val Arg Gly Lys Ala Val Lys Asp Leu
 65 70 75 80
 Ile Lys Asn Ala Asp Asp Arg Leu Lys Glu Phe Glu Lys Glu Glu Asp
 85 90 95

Ala Ile Lys Lys Ser Glu Gln Asp Phe Lys Lys Ala Lys Ser His Val
100 105 110

Asp Asn Ile Asp Asn Asp Val Lys Arg Lys Glu Val Lys Gln Leu Asp
115 120 125

Asp Val Leu Lys Glu Lys Tyr Lys Leu His Ser Asp Tyr Ala Lys Ala
130 135 140

Tyr Lys Lys Ala Val Asn Ser Glu Lys Thr Leu Phe Lys Tyr Leu Asn
145 150 155 160

Gln Asn Asp Ala Thr Gln Gln Gly Val Asn Glu Lys Ser Xaa Ala Ile
165 170 175

Glu Gln Asn Tyr Lys Lys Leu Lys Glu Val Ser Asp Lys Tyr Thr Lys
180 185 190

Val Leu Asn Lys Val Gly Lys Glu Lys Gln Asp Val Asp Gln Phe Lys
195 200 205

<210> 53
<211> 717
<212> DNA
<213> Staphylococcus aureus

<400> 53
atcgaggaca gaatattggt aaagtatgaa catattgcta agcagcttaa tgcgtttata 60
catcaatcta atttcaaacc cgggtgataaa ttgccaagcg tgacgcaatt aaaagaacgt 120
tatcaagtaa gtaagagtac tatcattaaa gcattaggct tattggaaca agatgggttg 180
atctatcaag cacaaggcag tgggtatttat gtgagaaata ttgctgatgc caatcgatc 240
aacgtcttta agactaatgg tttctctaaa agtttaggtg aacaccgaat gacaagtaag 300
gtacttggtt ttaaggagat tgcaacgcc cctaaatctg tacaagatga gctccaatta 360
aatgcagatg ataccgtcta ctatttagag cgattaagat tcgtggacga tgatgtttta 420
tgtatcgaat attcttatta tcataaagaa atcgtgaaat atttaaata tgatattgct 480
aagggtctta tcttcgacta tttagaatca aacatgaaac ttcgtattgg tttttcagat 540
atcttcttta atgtagatca actcattca agtgaagctt cattactaca attgtctaca 600
gggtgaaccat gtttacgtta ccaccagact ttttatataa tgactggcaa accctttgat 660
tcactcgaca tcgtatttca ttatcgatc gcacagtttt atattcctag taaaaag 717

<210> 54
<211> 239
<212> PRT
<213> Staphylococcus aureus

<400> 54
Ile Glu Asp Arg Ile Leu Leu Lys Tyr Glu His Ile Ala Lys Gln Leu
1 5 10 15

Asn Ala Phe Ile His Gln Ser Asn Phe Lys Pro Gly Asp Lys Leu Pro
20 25 30

Ser Val Thr Gln Leu Lys Glu Arg Tyr Gln Val Ser Lys Ser Thr Ile
35 40 45

Ile Lys Ala Leu Gly Leu Leu Glu Gln Asp Gly Leu Ile Tyr Gln Ala
50 55 60

Gln Gly Ser Gly Ile Tyr Val Arg Asn Ile Ala Asp Ala Asn Arg Ile
 65 70 75 80
 Asn Val Phe Lys Thr Asn Gly Phe Ser Lys Ser Leu Gly Glu His Arg
 85 90 95
 Met Thr Ser Lys Val Leu Val Phe Lys Glu Ile Ala Thr Pro Pro Lys
 100 105 110
 Ser Val Gln Asp Glu Leu Gln Leu Asn Ala Asp Asp Thr Val Tyr Tyr
 115 120 125
 Leu Glu Arg Leu Arg Phe Val Asp Asp Asp Val Leu Cys Ile Glu Tyr
 130 135 140
 Ser Tyr Tyr His Lys Glu Ile Val Lys Tyr Leu Asn Asp Asp Ile Ala
 145 150 155 160
 Lys Gly Ser Ile Phe Asp Tyr Leu Glu Ser Asn Met Lys Leu Arg Ile
 165 170 175
 Gly Phe Ser Asp Ile Phe Phe Asn Val Asp Gln Leu Thr Ser Ser Glu
 180 185 190
 Ala Ser Leu Leu Gln Leu Ser Thr Gly Glu Pro Cys Leu Arg Tyr His
 195 200 205
 Gln Thr Phe Tyr Thr Met Thr Gly Lys Pro Phe Asp Ser Ser Asp Ile
 210 215 220
 Val Phe His Tyr Arg His Ala Gln Phe Tyr Ile Pro Ser Lys Lys
 225 230 235

<210> 55
 <211> 716
 <212> DNA
 <213> Staphylococcus aureus

<400> 55
 atgactgtag aatgggttagc agaacaatta aaagaacata atattcaatt aactgagact 60
 caaaaacaac agtttcaaac atattatcgt ttacttggtg aatggaatga aaagatgaat 120
 ttgacaagta ttacagatga acacgatgta tatttgaaac atttttatga ttccattgca 180
 cctagttttt attttgattt taatcagcct ataagtatat gtgatgtagg cgctggagct 240
 ggttttccaa gtattccgtt aaaaataatg tttccgcagt taaaagtgac gattgttgat 300
 tcattaaata agcgtattca atttttaaac catttagcgt cagaattaca attacaggat 360
 gtcagcttta tacacgatag agcagaaaca tttggtaagg gtgtctacag ggagtcttat 420
 gatgttggtta ctgcaagagc agtagctaga ttatccgtgt taagtgaatt gtgtttaccg 480
 ctagttaaaa aaggtggaca gtttggtgca ttaaaatcct caaaagggtga agaagaatta 540
 gaagaagcaa aatttgcaat tagtgtgtta ggtggtaatg ttacagaaac acataccttt 600
 gaattgccag aagatgctgg agagcgccag atgttcatta ttgataaaaa aagacagacg 660
 ccgaaaaagt atccaagaaa accagggacg ctaataagac tcctttactt gaaaaa 716

<210> 56
 <211> 239
 <212> PRT
 <213> Staphylococcus aureus

<400> 56

Met Thr Val Glu Trp Leu Ala Glu Gln Leu Lys Glu His Asn Ile Gln
1 5 10 15
Leu Thr Glu Thr Gln Lys Gln Gln Phe Gln Thr Tyr Tyr Arg Leu Leu
20 25 30
Val Glu Trp Asn Glu Lys Met Asn Leu Thr Ser Ile Thr Asp Glu His
35 40 45
Asp Val Tyr Leu Lys His Phe Tyr Asp Ser Ile Ala Pro Ser Phe Tyr
50 55 60
Phe Asp Phe Asn Gln Pro Ile Ser Ile Cys Asp Val Gly Ala Gly Ala
65 70 75 80
Gly Phe Pro Ser Ile Pro Leu Lys Ile Met Phe Pro Gln Leu Lys Val
85 90 95
Thr Ile Val Asp Ser Leu Asn Lys Arg Ile Gln Phe Leu Asn His Leu
100 105 110
Ala Ser Glu Leu Gln Leu Gln Asp Val Ser Phe Ile His Asp Arg Ala
115 120 125
Glu Thr Phe Gly Lys Gly Val Tyr Arg Glu Ser Tyr Asp Val Val Thr
130 135 140
Ala Arg Ala Val Ala Arg Leu Ser Val Leu Ser Glu Leu Cys Leu Pro
145 150 155 160
Leu Val Lys Lys Gly Gly Gln Phe Val Ala Leu Lys Ser Ser Lys Gly
165 170 175
Glu Glu Glu Leu Glu Glu Ala Lys Phe Ala Ile Ser Val Leu Gly Gly
180 185 190
Asn Val Thr Glu Thr His Thr Phe Glu Leu Pro Glu Asp Ala Gly Glu
195 200 205
Arg Gln Met Phe Ile Ile Asp Lys Lys Arg Gln Thr Pro Lys Lys Tyr
210 215 220
Pro Arg Lys Pro Gly Thr Pro Asn Lys Thr Pro Leu Leu Glu Lys
225 230 235

<210> 57

<211> 1191

<212> DNA

<213> Staphylococcus aureus

<400> 57

atggcacata ccattacgat tggtggctta ggaaactatg gcattgatga tttgccgcta 60
gggatataata aattttttaa gacacaagat aaagtttatg caagaacggt agatcatcca 120
ggtatagaat cattgcaaga tgaattaaca tttcagagtt ttgaccatgt ttatgaagca 180
cataaccaat ttgaagatgt ctatattgat attgtggcgc aattgggtga agctgctaata 240
gaaaaagata ttgtctatgc gggtccgggt catcctagag ttgctgagac aactacagtg 300
aaattactgg ctttagcaaa ggacaatact gatatagatg tgaaagtgtt aggtgggaaa 360
agctttattg atgatgtgtt tgaagcagtt aatgtagatc caaatgatgg cttcacactg 420

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ttagatgcga catcattaca agaagtaaca cttaatgtta gaacgcatac attgattacg 480
caagtttata gtgcaatggg tgctgctaatt ttgaaaatca ctttaattgga acgatatcct 540
gatgattacc ctgttcaaatt tgctactggg gcacgaagcg atgggtgcgga taacgttgtg 600
acatgccccat tatatgaatt ggatcatgat gaaaatgcat tcaataattt gacgagtgtg 660
ttcgtaccaaa aaatcataac atcgacatat ttgtatcatg acttttgattt tgcaacggaa 720
gtgattgata ctttagttga tgaagataaa gggtgtccat gggataaagt gcaaacgcat 780
gmaacgctaa agcgttattt acttgaagaa acatttgaat tgttcgaagc tattgacaat 840
gaagatgatt ggcatatgat tgaagaacta ggagatatatt tattacaagt gttattgcat 900
actagtattg gtaaaaaaga agggatatatc gacattaaag aagtgattac aagtcttaat 960
gctaaaatga ttcgtagaca cccacacata tttgggtgatg ccaatgctga aactatcgat 1020
gacttaaaag aaatttggtc taaggcgaaa gatgctgaag gtaaacagcc aagagttaaa 1080
tttgaaaaag tatttgcaga gcatttttta aatttatatg agaagacgaa ggataagtea 1140
tttgatgagg ccgcgttaaa gcagtggcta gaaaaagggg agagtaatac a 1191

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<210> 58

<211> 397

<212> PRT

<213> Staphylococcus aureus

<220>

<221> MISC_FEATURE

<222> (261)..(261)

<223> Xaa = any of the twenty naturally occurring L-amino acids

<400> 58

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Met Ala His Thr Ile Thr Ile Val Gly Leu Gly Asn Tyr Gly Ile Asp
  1           5           10           15

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Asp Leu Pro Leu Gly Ile Tyr Lys Phe Leu Lys Thr Gln Asp Lys Val
          20           25           30

```

```

Tyr Ala Arg Thr Leu Asp His Pro Val Ile Glu Ser Leu Gln Asp Glu
    35           40           45

```

```

Leu Thr Phe Gln Ser Phe Asp His Val Tyr Glu Ala His Asn Gln Phe
    50           55           60

```

```

Glu Asp Val Tyr Ile Asp Ile Val Ala Gln Leu Val Glu Ala Ala Asn
    65           70           75           80

```

```

Glu Lys Asp Ile Val Tyr Ala Val Pro Gly His Pro Arg Val Ala Glu
          85           90           95

```

```

Thr Thr Thr Val Lys Leu Leu Ala Leu Ala Lys Asp Asn Thr Asp Ile
    100           105           110

```

```

Asp Val Lys Val Leu Gly Gly Lys Ser Phe Ile Asp Asp Val Phe Glu
    115           120           125

```

```

Ala Val Asn Val Asp Pro Asn Asp Gly Phe Thr Leu Leu Asp Ala Thr
    130           135           140

```

```

Ser Leu Gln Glu Val Thr Leu Asn Val Arg Thr His Thr Leu Ile Thr
    145           150           155           160

```

```

Gln Val Tyr Ser Ala Met Val Ala Ala Asn Leu Lys Ile Thr Leu Met
          165           170           175

```

```

Glu Arg Tyr Pro Asp Asp Tyr Pro Val Gln Ile Val Thr Gly Ala Arg
    180           185           190

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Ser Asp Gly Ala Asp Asn Val Val Thr Cys Pro Leu Tyr Glu Leu Asp
195 200 205

His Asp Glu Asn Ala Phe Asn Asn Leu Thr Ser Val Phe Val Pro Lys
210 215 220

Ile Ile Thr Ser Thr Tyr Leu Tyr His Asp Phe Asp Phe Ala Thr Glu
225 230 235 240

Val Ile Asp Thr Leu Val Asp Glu Asp Lys Gly Cys Pro Trp Asp Lys
245 250 255

Val Gln Thr His Xaa Thr Leu Lys Arg Tyr Leu Leu Glu Glu Thr Phe
260 265 270

Glu Leu Phe Glu Ala Ile Asp Asn Glu Asp Asp Trp His Met Ile Glu
275 280 285

Glu Leu Gly Asp Ile Leu Leu Gln Val Leu Leu His Thr Ser Ile Gly
290 295 300

Lys Lys Glu Gly Tyr Ile Asp Ile Lys Glu Val Ile Thr Ser Leu Asn
305 310 315 320

Ala Lys Met Ile Arg Arg His Pro His Ile Phe Gly Asp Ala Asn Ala
325 330 335

Glu Thr Ile Asp Asp Leu Lys Glu Ile Trp Ser Lys Ala Lys Asp Ala
340 345 350

Glu Gly Lys Gln Pro Arg Val Lys Phe Glu Lys Val Phe Ala Glu His
355 360 365

Phe Leu Asn Leu Tyr Glu Lys Thr Lys Asp Lys Ser Phe Asp Glu Ala
370 375 380

Ala Leu Lys Gln Trp Leu Glu Lys Gly Glu Ser Asn Thr
385 390 395

<210> 59

<211> 804

<212> DNA

<213> Staphylococcus aureus

<400> 59

aatgtaaatac attctaataa aacgacaact gtgtcttctt tacttgata tggtacatat 60
attcacgata gagaggataa gaaaatggct caaatttcta aatataaacg tgtagttttg 120
aaactaagtgt gtgaagcgtt agctggagaa aaaggatttg gcataaatcc agtaattatt 180
aaaagtgttg ctgagcaagt ggctgaagtt gctaaaatgg actgtgaaat cgcagtaatc 240
gttggtggcg gaaacatttg gagaggtaaa acaggtagtg acttaggtat ggaccgtgga 300
actgctgatt acatgggtat gcttgcaact gtaatgaatg ccttagcatt acaagatagt 360
ttagaacaat tggattgtga tacacgagta ttaacatcta ttgaaatgaa gcaagtggct 420
gaaccttata ttctgtctgt tgcaattaga cacttagaaa agaaacgcgt agttattttt 480
gctgcaggta ttggaaaccc atacttctct acagatacta cagcggcatt acgtgctgca 540
gaagttgaag cagatgttat tttaatgggc aaaaataatg tagatggtgt atattctgca 600
gatcctaaag taaacaaaga tgcggtaaaa tatgaacatt taacgcatat tcaaatgctt 660
caagaaggtt tacaagtaat ggattcaaca gcattcctcat tctgtatgga taataacatt 720
ccgttaactg ttttctctat tatggaagaa ggaaatatta aacgtgctgt tatgggtgaa 780

aagataggta cggttaattac aaaa

804

<210> 60

<211> 268

<212> PRT

<213> Staphylococcus aureus

<400> 60

Asn Val Asn His Ser Asn Lys Thr Thr Thr Val Ser Ser Leu Leu Val
1 5 10 15

Tyr Val Thr Tyr Ile His Asp Arg Glu Asp Lys Lys Met Ala Gln Ile
20 25 30

Ser Lys Tyr Lys Arg Val Val Leu Lys Leu Ser Gly Glu Ala Leu Ala
35 40 45

Gly Glu Lys Gly Phe Gly Ile Asn Pro Val Ile Ile Lys Ser Val Ala
50 55 60

Glu Gln Val Ala Glu Val Ala Lys Met Asp Cys Glu Ile Ala Val Ile
65 70 75 80

Val Gly Gly Gly Asn Ile Trp Arg Gly Lys Thr Gly Ser Asp Leu Gly
85 90 95

Met Asp Arg Gly Thr Ala Asp Tyr Met Gly Met Leu Ala Thr Val Met
100 105 110

Asn Ala Leu Ala Leu Gln Asp Ser Leu Glu Gln Leu Asp Cys Asp Thr
115 120 125

Arg Val Leu Thr Ser Ile Glu Met Lys Gln Val Ala Glu Pro Tyr Ile
130 135 140

Arg Arg Arg Ala Ile Arg His Leu Glu Lys Lys Arg Val Val Ile Phe
145 150 155 160

Ala Ala Gly Ile Gly Asn Pro Tyr Phe Ser Thr Asp Thr Thr Ala Ala
165 170 175

Leu Arg Ala Ala Glu Val Glu Ala Asp Val Ile Leu Met Gly Lys Asn
180 185 190

Asn Val Asp Gly Val Tyr Ser Ala Asp Pro Lys Val Asn Lys Asp Ala
195 200 205

Val Lys Tyr Glu His Leu Thr His Ile Gln Met Leu Gln Glu Gly Leu
210 215 220

Gln Val Met Asp Ser Thr Ala Ser Ser Phe Cys Met Asp Asn Asn Ile
225 230 235 240

Pro Leu Thr Val Phe Ser Ile Met Glu Glu Gly Asn Ile Lys Arg Ala
245 250 255

Val Met Gly Glu Lys Ile Gly Thr Leu Ile Thr Lys
260 265

<210> 61
 <211> 1068
 <212> DNA
 <213> Staphylococcus aureus

<400> 61
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 attctgacag cacaaaatgt attaaatgca atagataaag acaaatatca tggtgatatc 120
 atttatatta ccaatgatgg tgattggaga aagcaaaaata atattacagc tgaaattaaa 180
 tctactgatg agcttcattt agaaaatgga gaggcgcttg agatttcaca gctattgaaa 240
 gaaagtagtt caggacaacc atacgatgca gtattcccat tattacatgg tcctaattgg 300
 gaagatggca cgattcaagg gctttttgaa gttttggatg taccatatgt aggaaatgg 360
 gtattgtcag ctgcaagttc tatggacaaa cttgtaatga aacaattatt tgaacatcga 420
 gggttaccac agttacctta tattagtctt ttacgttctg aatatgaaaa atatgaacat 480
 aacattttta aattagtaaa tgataaatta aattaccagc tctttgttaa acctgctaac 540
 ttaggggtcaa gtgtaggtat cagtaaatgt aataatgaag cggaacttaa agaagggtatt 600
 aaagaagcat tccaatttga ccgtaagctt gttatagaac aaggcggttaa cgcacgtgaa 660
 attgaagtag cagtttttagg aaatgactat cctgaagcga catggccagg tgaagtcgta 720
 aaagatgtcg cgttttacga ttacaaatca aaatataaag atggtaagggt tcaattacaa 780
 attccagctg acttagacga agatgttcaa ttaacgctta gaaatatggc attagaggga 840
 ttcaaagcga cagattgttc tggtttagtc cgtgctgatt tctttgtaac agaagacaac 900
 caaatatata ttaatgaaac aaatgcaatg cctggattta cggctttcag tatgtatcca 960
 aagttatggg aaaatatggg cttatcttat ccagaattga ttacaaaact tatcgagctt 1020
 gctaaagaac gtcaccagga taaacagaaa aataaatata aaattgac 1068

<210> 62
 <211> 356
 <212> PRT
 <213> Staphylococcus aureus

<400> 62
 Met Thr Lys Glu Asn Ile Cys Ile Val Phe Gly Gly Lys Ser Ala Glu
 1 5 10 15
 His Glu Val Ser Ile Leu Thr Ala Gln Asn Val Leu Asn Ala Ile Asp
 20 25 30
 Lys Asp Lys Tyr His Val Asp Ile Ile Tyr Ile Thr Asn Asp Gly Asp
 35 40 45
 Trp Arg Lys Gln Asn Asn Ile Thr Ala Glu Ile Lys Ser Thr Asp Glu
 50 55 60
 Leu His Leu Glu Asn Gly Glu Ala Leu Glu Ile Ser Gln Leu Leu Lys
 65 70 75 80
 Glu Ser Ser Ser Gly Gln Pro Tyr Asp Ala Val Phe Pro Leu Leu His
 85 90 95
 Gly Pro Asn Gly Glu Asp Gly Thr Ile Gln Gly Leu Phe Glu Val Leu
 100 105 110
 Asp Val Pro Tyr Val Gly Asn Gly Val Leu Ser Ala Ala Ser Ser Met
 115 120 125
 Asp Lys Leu Val Met Lys Gln Leu Phe Glu His Arg Gly Leu Pro Gln
 130 135 140
 Leu Pro Tyr Ile Ser Phe Leu Arg Ser Glu Tyr Glu Lys Tyr Glu His
 145 150 155 160

Asn Ile Leu Lys Leu Val Asn Asp Lys Leu Asn Tyr Pro Val Phe Val
 165 170 175
 Lys Pro Ala Asn Leu Gly Ser Ser Val Gly Ile Ser Lys Cys Asn Asn
 180 185 190
 Glu Ala Glu Leu Lys Glu Gly Ile Lys Glu Ala Phe Gln Phe Asp Arg
 195 200 205
 Lys Leu Val Ile Glu Gln Gly Val Asn Ala Arg Glu Ile Glu Val Ala
 210 215 220
 Val Leu Gly Asn Asp Tyr Pro Glu Ala Thr Trp Pro Gly Glu Val Val
 225 230 235 240
 Lys Asp Val Ala Phe Tyr Asp Tyr Lys Ser Lys Tyr Lys Asp Gly Lys
 245 250 255
 Val Gln Leu Gln Ile Pro Ala Asp Leu Asp Glu Asp Val Gln Leu Thr
 260 265 270
 Leu Arg Asn Met Ala Leu Glu Ala Phe Lys Ala Thr Asp Cys Ser Gly
 275 280 285
 Leu Val Arg Ala Asp Phe Phe Val Thr Glu Asp Asn Gln Ile Tyr Ile
 290 295 300
 Asn Glu Thr Asn Ala Met Pro Gly Phe Thr Ala Phe Ser Met Tyr Pro
 305 310 315 320
 Lys Leu Trp Glu Asn Met Gly Leu Ser Tyr Pro Glu Leu Ile Thr Lys
 325 330 335
 Leu Ile Glu Leu Ala Lys Glu Arg His Gln Asp Lys Gln Lys Asn Lys
 340 345 350
 Tyr Lys Ile Asp
 355

<210> 63
 <211> 861
 <212> DNA
 <213> Staphylococcus aureus

<400> 63
 atgacgaatc taccgatgaa taaattaata gatgaagtca ataatgaatt atcgggttgcg 60
 ataaataaaat cagtaaatgga tactcagcta gaagaaaagta tggtgtattc attaaatgct 120
 ggaggtaaac gcatccgacc agttctgtta ttactcactt tagattcact aaataccgag 180
 tatgagttag gtatgaagag cgcaattgca ctagaaatga ttcatacata ttcacttatt 240
 catgatgacc taccagcgat ggataatgat gattatcgac gaggaaaatt aacaaatcat 300
 aaagtatatg gtgagtggac tgcgatatta gcaggatgat ctttattaac taaagcattt 360
 gaacttattt caagtgatga tagattaact gatgaagtaa aaataaaaagt tctacaacgg 420
 ctgtcaatag caagtggatg tggttgaatg gtcggcggtc aaatggttaga tatgcaaagc 480
 gaaggccaac caattgatct tgaaactttg gaaatgatac acaaaacaaa aacaggagca 540
 ttattaactt ttgcggttat gagtgcagca gatatcgcta atgtcgatga tacaactaaa 600
 gaacatttag aaagttatag ttatcattta ggtatgatgt tccagattaa agatgattta 660
 ttagactgct atggtgatga agcaaaagta ggtaaaaaag tgggcagcga tcttgaaaat 720
 aataaaaagta cgtacgtgag tttattaggg aaagatggcg cagaagataa attgacttat 780

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catagagacg cagcagtgga tgaactaacg caaattgatg aacaattcaa tacaaaaacac 840
ttattagaaa tcgttgattt a                                     861
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<210> 64
<211> 287
<212> PRT
<213> Staphylococcus aureus
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Met Thr Asn Leu Pro Met Asn Lys Leu Ile Asp Glu Val Asn Asn Glu
1 5 10 15

Ser Met Leu Tyr Ser Leu Asn Ala Gly Gly Lys Arg Ile Arg Pro Val
 35 40 45

Met Lys Ser Ala Ile Ala Leu Glu Met Ile His Thr Tyr Ser Leu Ile
65 70 75 80

Leu Thr Asn His Lys Val Tyr Gly Glu Trp Thr Ala Ile Leu Ala Gly
100 105 110

Leu Thr Asp Glu Val Lys Ile Lys Val Leu Gln Arg Leu Ser Ile Ala
130 135 140

Glu Gly Gln Pro Ile Asp Leu Glu Thr Leu Glu Met Ile His Lys Thr
165 170 175

Ala Asn Val Asp Asp Thr Thr Lys Glu His Leu Glu Ser Tyr Ser Tyr
195 200 205

Gly Asp Glu Ala Lys Leu Gly Lys Lys Val Gly Ser Asp Leu Glu Asn
225 230 235 240

Lys Leu Thr Tyr His Arg Asp Ala Ala Val Asp Glu Leu Thr Gln Ile
260 265 270

Asp Glu Gln Phe Asn Thr Lys His Leu Leu Glu Ile Val Asp Leu
 275 280 285

<210> 65
 <211> 819
 <212> DNA
 <213> Staphylococcus aureus

<220>
 <221> misc_feature
 <222> (812)..(812)
 <223> n = a, t, c, or g

<400> 65
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 aaaagcgaca agcgtcgagg caagttaacc atatcaaaga aatgggatca gacaactgct 180
 attttaactg ggaattttttt attggcatta ggacttgaac acttaatggc cggttaaagat 240
 aatcgtgtac atcaattgat atctgaatct atcgttgatg tttgtagagg ggaacttttc 300
 caatttcaag accaatttaa cagtcaacag acaattatta attatttacg acgtatcaat 360
 cgcaaaacag cactgttaat tcaaataatca actgaagttg gtgcaattac ttctcaatct 420
 gataaagaga ctgtacgaaa attgaaaatg attgggtcatt atataggtat gagcttccaa 480
 atcattgatg atgtattaga cttcacaagt accgaaaaga aattaggtaa gccgggtcga 540
 agtgatttgc ttaatggtca tattacgtta ccgattttat tagaaatgcg taaaaatcca 600
 gacttcaaatt tgaaaatcga acagttacgt cgtgatagtg aacgcaaaga atttgaagaa 660
 tgtatccaaa tcattagaaa atctgacagc atcgatgagg ctaaggcagt aagttcgaag 720
 tatttaagta aagcyttgaa tttgatttcy gagttaccag atggacatcc gagatcacta 780
 cytttaagtt tgacgaaaaa aatgggttca anaaacacg 819

<210> 66
 <211> 273
 <212> PRT
 <213> Staphylococcus aureus

<220>
 <221> MISC_FEATURE
 <222> (261)..(261)
 <223> Xaa = any of the twenty naturally occurring L-amino acids

<220>
 <221> MISC_FEATURE
 <222> (271)..(271)
 <223> Xaa = any of the twenty naturally occurring L-amino acids

<400> 66
 Phe Val Ile Leu Ser Ser Gln Phe Gly Lys Asp Glu Gln Thr Ser Glu
 1 5 10 15
 Gln Thr Tyr Gln Val Ala Val Ala Leu Glu Leu Ile His Met Ala Thr
 20 25 30
 Leu Val His Asp Asp Val Ile Asp Lys Ser Asp Lys Arg Arg Gly Lys
 35 40 45
 Leu Thr Ile Ser Lys Lys Trp Asp Gln Thr Thr Ala Ile Leu Thr Gly
 50 55 60
 Asn Phe Leu Leu Ala Leu Gly Leu Glu His Leu Met Ala Val Lys Asp
 65 70 75 80

Asn Arg Val His Gln Leu Ile Ser Glu Ser Ile Val Asp Val Cys Arg
 85 90 95
 Gly Glu Leu Phe Gln Phe Gln Asp Gln Phe Asn Ser Gln Gln Thr Ile
 100 105 110
 Ile Asn Tyr Leu Arg Arg Ile Asn Arg Lys Thr Ala Leu Leu Ile Gln
 115 120 125
 Ile Ser Thr Glu Val Gly Ala Ile Thr Ser Gln Ser Asp Lys Glu Thr
 130 135 140
 Val Arg Lys Leu Lys Met Ile Gly His Tyr Ile Gly Met Ser Phe Gln
 145 150 155 160
 Ile Ile Asp Asp Val Leu Asp Phe Thr Ser Thr Glu Lys Lys Leu Gly
 165 170 175
 Lys Pro Val Gly Ser Asp Leu Leu Asn Gly His Ile Thr Leu Pro Ile
 180 185 190
 Leu Leu Glu Met Arg Lys Asn Pro Asp Phe Lys Leu Lys Ile Glu Gln
 195 200 205
 Leu Arg Arg Asp Ser Glu Arg Lys Glu Phe Glu Glu Cys Ile Gln Ile
 210 215 220
 Ile Arg Lys Ser Asp Ser Ile Asp Glu Ala Lys Ala Val Ser Ser Lys
 225 230 235 240
 Tyr Leu Ser Lys Ala Leu Asn Leu Ile Ser Glu Leu Pro Asp Gly His
 245 250 255
 Pro Arg Ser Leu Xaa Leu Ser Leu Thr Lys Lys Met Gly Ser Xaa Asn
 260 265 270

Thr

<210> 67
 <211> 504
 <212> DNA
 <213> Staphylococcus aureus

<400> 67
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 gaagcaatta ataatgcyma agaaaagaca gctaataata ccggcttaaa attaataatt 180
 gcaattaatt atggtggcag agcagaactt gttcatagta ttaaaaatat gtttgacgag 240
 cttcatcaac aaggtttaaa tagtgatata atagatgaaa catatataaa caatcattta 300
 atgacaaaag actatcctga tccagagttg ttaattcgta cttcaggaga acaaagaata 360
 agtaatttct tgatttggca agtttcgtat agtgaattta tctttaatca aaaattatgg 420
 cctgactttg acgaagatga attaattaaa tgtataaaaa tttatcagtc acgtcaaaga 480
 cgctttggcg gattgagtga ggag 504

<210> 68
 <211> 168
 <212> PRT

<213> Staphylococcus aureus

<220>

<221> MISC_FEATURE

<222> (47)..(47)

<223> Xaa = any of the twenty naturally occurring L-amino acids

<400> 68

Val Asn Tyr Ile Met Asn Leu Pro Val Asn Phe Leu Lys Thr Phe Leu
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Pro Glu Leu Ile Glu Lys Asn Val Lys Val Glu Thr Ile Gly Phe Thr
20 25 30

Asp Lys Leu Pro Lys Ser Thr Ile Glu Ala Ile Asn Asn Ala Xaa Glu
35 40 45

Lys Thr Ala Asn Asn Thr Gly Leu Lys Leu Ile Phe Ala Ile Asn Tyr
50 55 60

Gly Gly Arg Ala Glu Leu Val His Ser Ile Lys Asn Met Phe Asp Glu
65 70 75 80

Leu His Gln Gln Gly Leu Asn Ser Asp Ile Ile Asp Glu Thr Tyr Ile
85 90 95

Asn Asn His Leu Met Thr Lys Asp Tyr Pro Asp Pro Glu Leu Leu Ile
100 105 110

Arg Thr Ser Gly Glu Gln Arg Ile Ser Asn Phe Leu Ile Trp Gln Val
115 120 125

Ser Tyr Ser Glu Phe Ile Phe Asn Gln Lys Leu Trp Pro Asp Phe Asp
130 135 140

Glu Asp Glu Leu Ile Lys Cys Ile Lys Ile Tyr Gln Ser Arg Gln Arg
145 150 155 160

Arg Phe Gly Gly Leu Ser Glu Glu
165

<210> 69

<211> 1823

<212> DNA

<213> Staphylococcus aureus

<400> 69

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ctgcttgata attttaagaa gaattattacg cagtacgcga aacaattaga aattagtatt 180
gaaaaagtat atgacgaaaa gggctccgta aatgcacaaa aagatattca aaatttatta 240
agtgagtatg ccaaccgtca agaaattgga gaaattcgtt ttatagataa agaccaaatt 300
attattgcga cgacgaagca gtctaaccgt agtctaataca atcaaaaagc gaatgatagt 360
tctgtccaaa aagcactatc actaggacaa tcaaaccgatc atttaatttt aaaagattat 420
ggcgggtgga aggaccgtgt ctgggtatat aatatcccag ttaaagtcga taaaaaggta 480
attggttaata tttatatcga atcaaaaatt aatgacgttt ataaccaatt aaataatata 540
aatcaaatat tcattgttgg tacagctatt tcattattaa tcacagtcac cctaggattc 600
tttatagcgc gaacgattac caaaccaatc accgatatgc gtaaccagac ggctcgaaatg 660
tccaggagga actatacgca acgtgtgaag atttatggta atgatgaaat tggcgaatta 720

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gcttttagcat ttaataactt gtctaaacgt gtacaagaag cgcaggctaa tactgaaagt 780
gagaaacgta gactggactc agttatcacc catatgagtg atgggtattat tgcaacagac 840
cgccgtggac gtattcgtat cgtcaatgat atggcactca agatgcttgg tatggcgaaa 900
gaagacatca tcggatatta catgttaagt gtattaagtc ttgaagatga atttaaactg 960
gaagaaattc aagagaataa tgatagtttc ttattagatt taaatgaaga agaaggtcta 1020
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gctgtgttac atgacgtaac tgaacaacaa caagttgaac gtgagcgtcg tgaatttggt 1140
gccaatgtat cacatgagtt acgtacacct ttaactttcta tgaatagtta cattgaagca 1200
cttgaagaag gtgcatggaa agatgaggaa cttgcgccac aattttttatc tgttaccggt 1260
gaagaaacag aacgaatgat tcgactggtc aatgacttgc tacagttatc taaaatggat 1320
aatgagtctg atcaaatcaa caaagaaatt acgactttta catgttcatt aataaaaatta 1380
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cgattttcac agaatttgat cctgataaaa tgacgcaagt atttgataat gtcattacaa 1500
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gtactggatt aggactagcc atttcgaaag agattgtgga agcgcacaat ggtcgtatct 1740
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<210> 70

<211> 608

<212> PRT

<213> Staphylococcus aureus

<400> 70

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Met Lys Trp Leu Lys Gln Leu Gln Ser Leu His Thr Lys Phe Val Ile
  1              5              10              15

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Val Tyr Val Leu Leu Ile Ile Ile Gly Met Gln Ile Ile Gly Leu Tyr
      20              25              30

```

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Phe Thr Asn Asn Leu Glu Lys Glu Leu Leu Asp Asn Phe Lys Lys Asn
      35              40              45

```

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Ile Thr Gln Tyr Ala Lys Gln Leu Glu Ile Ser Ile Glu Lys Val Tyr
      50              55              60

```

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Asp Glu Lys Gly Ser Val Asn Ala Gln Lys Asp Ile Gln Asn Leu Leu
      65              70              75              80

```

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Ser Glu Tyr Ala Asn Arg Gln Glu Ile Gly Glu Ile Arg Phe Ile Asp
      85              90              95

```

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Lys Asp Gln Ile Ile Ile Ala Thr Thr Lys Gln Ser Asn Arg Ser Leu
      100              105              110

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Ile Asn Gln Lys Ala Asn Asp Ser Ser Val Gln Lys Ala Leu Ser Leu
      115              120              125

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```

Gly Gln Ser Asn Asp His Leu Ile Leu Lys Asp Tyr Gly Gly Gly Lys
      130              135              140

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Asp Arg Val Trp Val Tyr Asn Ile Pro Val Lys Val Asp Lys Lys Val
      145              150              155              160

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Ile Gly Asn Ile Tyr Ile Glu Ser Lys Ile Asn Asp Val Tyr Asn Gln
      165              170              175

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Leu Asn Asn Ile Asn Gln Ile Phe Ile Val Gly Thr Ala Ile Ser Leu
 180 185 190
 Leu Ile Thr Val Ile Leu Gly Phe Phe Ile Ala Arg Thr Ile Thr Lys
 195 200 205
 Pro Ile Thr Asp Met Arg Asn Gln Thr Val Glu Met Ser Arg Gly Asn
 210 215 220
 Tyr Thr Gln Arg Val Lys Ile Tyr Gly Asn Asp Glu Ile Gly Glu Leu
 225 230 235 240
 Ala Leu Ala Phe Asn Asn Leu Ser Lys Arg Val Gln Glu Ala Gln Ala
 245 250 255
 Asn Thr Glu Ser Glu Lys Arg Arg Leu Asp Ser Val Ile Thr His Met
 260 265 270
 Ser Asp Gly Ile Ile Ala Thr Asp Arg Arg Gly Arg Ile Arg Ile Val
 275 280 285
 Asn Asp Met Ala Leu Lys Met Leu Gly Met Ala Lys Glu Asp Ile Ile
 290 295 300
 Gly Tyr Tyr Met Leu Ser Val Leu Ser Leu Glu Asp Glu Phe Lys Leu
 305 310 315 320
 Glu Glu Ile Gln Glu Asn Asn Asp Ser Phe Leu Leu Asp Leu Asn Glu
 325 330 335
 Glu Glu Gly Leu Ile Ala Arg Val Asn Phe Ser Thr Ile Val Gln Glu
 340 345 350
 Thr Gly Phe Val Thr Gly Tyr Ile Ala Val Leu His Asp Val Thr Glu
 355 360 365
 Gln Gln Gln Val Glu Arg Glu Arg Arg Glu Phe Val Ala Asn Val Ser
 370 375 380
 His Glu Leu Arg Thr Pro Leu Thr Ser Met Asn Ser Tyr Ile Glu Ala
 385 390 395 400
 Leu Glu Glu Gly Ala Trp Lys Asp Glu Glu Leu Ala Pro Gln Phe Leu
 405 410 415
 Ser Val Thr Arg Glu Glu Thr Glu Arg Met Ile Arg Leu Val Asn Asp
 420 425 430
 Leu Leu Gln Leu Ser Lys Met Asp Asn Glu Ser Asp Gln Ile Asn Lys
 435 440 445
 Glu Ile Ile Asp Phe Asn Met Phe Ile Asn Lys Ile Ile Asn Arg His
 450 455 460
 Glu Met Ser Ala Lys Asp Thr Thr Phe Ile Arg Asp Ile Pro Lys Lys
 465 470 475 480
 Thr Ile Phe Thr Glu Phe Asp Pro Asp Lys Met Thr Gln Val Phe Asp
 485 490 495

Asn Val Ile Thr Asn Ala Met Lys Tyr Ser Arg Gly Asp Lys Arg Val
 500 505 510
 Glu Phe His Val Lys Gln Asn Pro Leu Tyr Asn Arg Met Thr Ile Arg
 515 520 525
 Ile Lys Asp Asn Gly Ile Gly Ile Pro Ile Asn Lys Val Asp Lys Ile
 530 535 540
 Phe Asp Arg Phe Tyr Arg Val Asp Lys Ala Arg Thr Arg Lys Met Gly
 545 550 555 560
 Gly Thr Gly Leu Gly Leu Ala Ile Ser Lys Glu Ile Val Glu Ala His
 565 570 575
 Asn Gly Arg Ile Trp Ala Asn Ser Val Glu Gly Gln Gly Thr Ser Ile
 580 585 590
 Phe Ile Thr Leu Pro Cys Glu Val Ile Glu Asp Gly Asp Trp Asp Glu
 595 600 605

<210> 71

<211> 2232

<212> DNA

<213> Staphylococcus aureus

<400> 71

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 caacaaccag aacgaggaaa gatatatgat cgtaattggt aagtgttagc agaagatgta 240
 gaaagatata aacttggttg agtaatatag aaaaaggcga gtgccaattc taaaaaacct 300
 aggcattgtag ttgataaaaa agagactgca aagaaattat ctacagtcac taatatgaag 360
 ccagaggaaa ttgaaaagag acttagtcaa aagaaagctt tccaaattga atttggtgacgc 420
 aaaggaacaa atttaacgta tcaggacaaa ttgaaaatag agaaaatgaa tttgcctgggt 480
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 attggttagag ctacagaaaa tccggatact ggtgaactta aagggtgcact tggagttaga 600
 aagatttttg atagttattt aagtggatct aaaggatcat tgagatatat tcatgatatt 660
 tggggatata tcgcacccaaa tactaaaaaa gagaagcagc ctaaacgtgg tgatgatgac 720
 catttaacaa tcgattcaaa tattcaagta tttgttgaag aagctttaga tggcatgggt 780
 gaaagatacc agccgaaaga tttatttgcg gttgtcatgg atgccaaaac tggagaaaatt 840
 ttagcatata gtcagcgacc aacatttaac cctgaaactg gtaaagactt tggtaaaaag 900
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 ttagcagctg ctattcaaga aggtgctttt gatcctgata agaaatataa atctggacat 1020
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 atggttgatg gagaagcacc tgggtcaaatt ggatggagta atgagttgca acaaaaaacg 1260
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 actgctgaaa aagttgaaaa gcaattggat ttagttgtga atagtaagaa gagtcacgct 1500
 gcaaactatc gtattgatgg ttatgaggtc gaaggtaaga ctggtacagc acagtcgct 1560
 gcacctaata gtggtggata cgttaaaggc ccaaaccat attttgtaag ttttatgggt 1620
 gacgcgccga agaaaaatcc taaagttatt gtatagctg gtatgagctt ggcacaaaaa 1680
 aatgaccaag aagcttatga attaggtgtt agtaaagcgt ttaaaccaat aatggaaaaa 1740

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aaagtgccag atgttgaagg tcaagacaaa caaaaagcta ttgataatgt gagtgcaaaa 1860
tcattagaac cagttactat tggttctggc acacaaataa aagcacaatc tataaaagca 1920
gggaataaag tcttacctca tagtaaagta ctgttattaa cagatggaga cttaactatg 1980
cctgacatgt caggatggac gaaagaagat gtcattgctt ttgaaaacct aacaaatatt 2040
aaagtaaatt taaaaggtag cggttttgtg tcccaccaat caattagtaa gggacaaaaa 2100
cttactgaaa aagataaaat agacgtagaa ttttcatcag agaattgtag cagcaattcg 2160
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gataagtcgg ac 2232

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<210> 72

<211> 744

<212> PRT

<213> Staphylococcus aureus

<400> 72

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      20              25              30

Ile Ser Tyr Ile Met Ile Thr Gly His Ser Asn Gly Gln Asp Leu Val
      35              40              45

Met Lys Ala Asn Glu Lys Tyr Leu Val Lys Asn Ala Gln Gln Pro Glu
      50              55              60

Arg Gly Lys Ile Tyr Asp Arg Asn Gly Lys Val Leu Ala Glu Asp Val
      65              70              75              80

Glu Arg Tyr Lys Leu Val Ala Val Ile Asp Lys Lys Ala Ser Ala Asn
      85              90              95

Ser Lys Lys Pro Arg His Val Val Asp Lys Lys Glu Thr Ala Lys Lys
      100              105              110

Leu Ser Thr Val Ile Asn Met Lys Pro Glu Glu Ile Glu Lys Arg Leu
      115              120              125

Ser Gln Lys Lys Ala Phe Gln Ile Glu Phe Gly Arg Lys Gly Thr Asn
      130              135              140

Leu Thr Tyr Gln Asp Lys Leu Lys Ile Glu Lys Met Asn Leu Pro Gly
      145              150              155              160

Ile Ser Leu Leu Pro Glu Thr Glu Arg Phe Tyr Pro Asn Gly Asn Phe
      165              170              175

Ala Ser His Leu Ile Gly Arg Ala Gln Lys Asn Pro Asp Thr Gly Glu
      180              185              190

Leu Lys Gly Ala Leu Gly Val Glu Lys Ile Phe Asp Ser Tyr Leu Ser
      195              200              205

Gly Ser Lys Gly Ser Leu Arg Tyr Ile His Asp Ile Trp Gly Tyr Ile
      210              215              220

Ala Pro Asn Thr Lys Lys Glu Lys Gln Pro Lys Arg Gly Asp Asp Val
      225              230              235              240

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His Leu Thr Ile Asp Ser Asn Ile Gln Val Phe Val Glu Glu Ala Leu
 245 250 255
 Asp Gly Met Val Glu Arg Tyr Gln Pro Lys Asp Leu Phe Ala Val Val
 260 265 270
 Met Asp Ala Lys Thr Gly Glu Ile Leu Ala Tyr Ser Gln Arg Pro Thr
 275 280 285
 Phe Asn Pro Glu Thr Gly Lys Asp Phe Gly Lys Lys Trp Ala Asn Asp
 290 295 300
 Leu Tyr Gln Asn Thr Tyr Glu Pro Gly Ser Thr Phe Lys Ser Tyr Gly
 305 310 315 320
 Leu Ala Ala Ala Ile Gln Glu Gly Ala Phe Asp Pro Asp Lys Lys Tyr
 325 330 335
 Lys Ser Gly His Arg Asp Ile Met Gly Ser Arg Ile Ser Asp Trp Asn
 340 345 350
 Arg Val Gly Trp Gly Glu Ile Pro Met Ser Leu Gly Phe Thr Tyr Ser
 355 360 365
 Ser Asn Thr Leu Met Met His Leu Gln Asp Leu Val Gly Ala Asp Lys
 370 375 380
 Met Lys Ser Trp Tyr Glu Arg Phe Gly Phe Gly Lys Ser Thr Lys Gly
 385 390 395 400
 Met Phe Asp Gly Glu Ala Pro Gly Gln Ile Gly Trp Ser Asn Glu Leu
 405 410 415
 Gln Gln Lys Thr Ser Ser Phe Gly Gln Ser Thr Thr Val Thr Pro Val
 420 425 430
 Gln Met Leu Gln Ala Gln Ser Ala Phe Phe Asn Asp Gly Asn Met Leu
 435 440 445
 Lys Pro Trp Phe Val Asn Ser Val Glu Asn Pro Val Ser Lys Arg Gln
 450 455 460
 Phe Tyr Lys Gly Gln Lys Gln Ile Ala Gly Lys Pro Ile Thr Lys Asp
 465 470 475 480
 Thr Ala Glu Lys Val Glu Lys Gln Leu Asp Leu Val Val Asn Ser Lys
 485 490 495
 Lys Ser His Ala Ala Asn Tyr Arg Ile Asp Gly Tyr Glu Val Glu Gly
 500 505 510
 Lys Thr Gly Thr Ala Gln Val Ala Ala Pro Asn Gly Gly Gly Tyr Val
 515 520 525
 Lys Gly Pro Asn Pro Tyr Phe Val Ser Phe Met Gly Asp Ala Pro Lys
 530 535 540
 Lys Asn Pro Lys Val Ile Val Tyr Ala Gly Met Ser Leu Ala Gln Lys
 545 550 555 560

Asn Asp Gln Glu Ala Tyr Glu Leu Gly Val Ser Lys Ala Phe Lys Pro
 565 570 575
 Ile Met Glu Asn Thr Leu Lys Tyr Leu Asn Val Gly Lys Ser Lys Asp
 580 585 590
 Asp Thr Ser Asn Ala Glu Tyr Ser Lys Val Pro Asp Val Glu Gly Gln
 595 600 605
 Asp Lys Gln Lys Ala Ile Asp Asn Val Ser Ala Lys Ser Leu Glu Pro
 610 615 620
 Val Thr Ile Gly Ser Gly Thr Gln Ile Lys Ala Gln Ser Ile Lys Ala
 625 630 635 640
 Gly Asn Lys Val Leu Pro His Ser Lys Val Leu Leu Leu Thr Asp Gly
 645 650 655
 Asp Leu Thr Met Pro Asp Met Ser Gly Trp Thr Lys Glu Asp Val Ile
 660 665 670
 Ala Phe Glu Asn Leu Thr Asn Ile Lys Val Asn Leu Lys Gly Ser Gly
 675 680 685
 Phe Val Ser His Gln Ser Ile Ser Lys Gly Gln Lys Leu Thr Glu Lys
 690 695 700
 Asp Lys Ile Asp Val Glu Phe Ser Ser Glu Asn Val Asp Ser Asn Ser
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 725 730 735
 Lys Thr Asp Lys Asp Lys Ser Asp
 740

<210> 73
 <211> 1677
 <212> DNA
 <213> Staphylococcus aureus

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 attttgcaaa attttaaaga actagggatt tcggataata cggttcagtc acttgaatca 180
 atgggattta aagagccgac acctatccaa aaagacagta tcccttatgc gttacaagga 240
 attgatatcc ttgggcaagc tcaaaccggt acaggtaaaa caggagcatt cggatttcct 300
 ttaattgaga aagtagtagg gaaacaaggg gttcaatcgt tgatttttagc acctacaaga 360
 gaattggcaa tgcaggtagc tgaacaatta agagaattta gccgtggaca aggtgtccaa 420
 gttgttactg tattcggtgg tatgcctatc gaacgcaaaa ttaaagcctt gaaaaaaggc 480
 ccacaaatcg tagtcggaac acctgggcgt gttatcgacc atttaaattcg tcgcacatta 540
 aaaacggacg gaattcatatc ttgtatttta gatgaagctg atgaaatgat gaatatggga 600
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 ccaaaaatca ttaagacaat gaataatgaa atgtctgac cacaatcga agaattctat 780
 acaattgtta aagaattaga gaaatttgat acattttacaa atttcctaga tgttcatcaa 840
 cctgaattag caatcgtatt cggacgtaca aaacgctcgt ttgatgaatt aacaagtgc 900
 ttgattttcta aaggatataa agctgaaggt ttacatggtg atattacaca agcgaaacgt 960

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<210> 74

<211> 526

<212> PRT

<213> *Staphylococcus aureus*

<400> 74

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          20                      25                      30

Asn Thr Val Gln Ser Leu Glu Ser Met Gly Phe Lys Glu Pro Thr Pro
          35                      40                      45

Ile Gln Lys Asp Ser Ile Pro Tyr Ala Leu Gln Gly Ile Asp Ile Leu
          50                      55                      60

Gly Gln Ala Gln Thr Gly Thr Gly Lys Thr Gly Ala Phe Gly Ile Pro
          65                      70                      75                      80

Leu Ile Glu Lys Val Val Gly Lys Gln Gly Val Gln Ser Leu Ile Leu
          85                      90                      95

Ala Pro Thr Arg Glu Leu Ala Met Gln Val Ala Glu Gln Leu Arg Glu
          100                     105                     110

Phe Ser Arg Gly Gln Gly Val Gln Val Val Thr Val Phe Gly Gly Met
          115                     120                     125

Pro Ile Glu Arg Gln Ile Lys Ala Leu Lys Lys Gly Pro Gln Ile Val
          130                     135                     140

Val Gly Thr Pro Gly Arg Val Ile Asp His Leu Asn Arg Arg Thr Leu
          145                     150                     155                     160

Lys Thr Asp Gly Ile His Thr Leu Ile Leu Asp Glu Ala Asp Glu Met
          165                     170                     175

Met Asn Met Gly Phe Ile Asp Asp Met Arg Phe Ile Met Asp Lys Ile
          180                     185                     190

Pro Ala Val Gln Arg Gln Thr Met Leu Phe Ser Ala Thr Met Pro Lys
          195                     200                     205

Ala Ile Gln Ala Leu Val Gln Gln Phe Met Lys Ser Pro Lys Ile Ile
          210                     215                     220

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Lys Thr Met Asn Asn Glu Met Ser Asp Pro Gln Ile Glu Glu Phe Tyr
 225 230 235 240
 Thr Ile Val Lys Glu Leu Glu Lys Phe Asp Thr Phe Thr Asn Phe Leu
 245 250 255
 Asp Val His Gln Pro Glu Leu Ala Ile Val Phe Gly Arg Thr Lys Arg
 260 265 270
 Arg Val Asp Glu Leu Thr Ser Ala Leu Ile Ser Lys Gly Tyr Lys Ala
 275 280 285
 Glu Gly Leu His Gly Asp Ile Thr Gln Ala Lys Arg Leu Glu Val Leu
 290 295 300
 Lys Lys Phe Lys Asn Asp Gln Ile Asn Ile Leu Val Ala Thr Asp Val
 305 310 315 320
 Ala Ala Arg Gly Leu Asp Ile Ser Gly Val Ser His Val Tyr Asn Phe
 325 330 335
 Asp Ile Pro Gln Asp Thr Glu Ser Tyr Thr His Arg Ile Gly Arg Thr
 340 345 350
 Gly Arg Ala Gly Lys Glu Gly Ile Ala Val Thr Phe Val Asn Pro Ile
 355 360 365
 Glu Met Asp Tyr Ile Arg Gln Ile Glu Asp Ala Asn Gly Arg Lys Met
 370 375 380
 Ser Ala Leu Arg Pro Pro His Arg Lys Glu Val Leu Gln Ala Arg Glu
 385 390 395 400
 Asp Asp Ile Lys Glu Lys Val Glu Asn Trp Met Ser Lys Glu Ser Glu
 405 410 415
 Ser Arg Leu Lys Arg Ile Ser Thr Glu Leu Leu Asn Glu Tyr Asn Asp
 420 425 430
 Val Asp Leu Val Ala Ala Leu Leu Gln Glu Leu Val Glu Ala Asn Asp
 435 440 445
 Glu Val Glu Val Gln Leu Thr Phe Glu Lys Pro Leu Ser Arg Lys Gly
 450 455 460
 Arg Asn Gly Lys Pro Ser Gly Ser Arg Asn Arg Asn Ser Lys Arg Gly
 465 470 475 480
 Asn Pro Lys Phe Asp Ser Lys Ser Lys Arg Ser Lys Gly Tyr Ser Ser
 485 490 495
 Lys Lys Lys Ser Thr Lys Lys Phe Asp Arg Lys Glu Lys Ser Ser Gly
 500 505 510
 Gly Ser Arg Pro Met Lys Gly Arg Thr Phe Ala Asp His Gln
 515 520 525